

THE PRACTICAL GROCER



Camden Town Branch,
18, Camden Street, N.W.1.
(EUSon 1976)

This book should be returned on or before the last date stamped below. Fines for retention beyond this date are: - 2d for the first week or part thereof and 4d for every subsequent week or part thereof. The loan may be renewed on application to the issuing branch, (if the book is not required by another reader). Please quote author, title and date due for return.

1.7 SIM



30106022766777

London Borough of Camden

Swiss Cottage Library
88 Avenue Road
LONDON
NW3 3HA

Tel: 01-278 4444
Extensions:
Book Renewals 3021
Lending Library 3012

This book is due for return on or before the date stamped below. The period of loan can be extended if the book is not reserved (please ask for details of renewal facilities).

~~Fines are charged on overdue books~~


Lending Library hours: Mon-Fri 9.30-8 Sat 9.30-5

RESERVE STOCK

24. 03. 82

LA 104

THE PRACTICAL GROCER



Digitized by the Internet Archive
in 2015

https://archive.org/details/b21505949_0004



THE OIL REGION OF LOS ANGELES, CALIFORNIA

THE OIL REGION OF LOS ANGELES, CALIFORNIA

Not many years ago a man who resided in the beautiful Californian city of Los Angeles discovered the presence of petroleum beneath the soil of his garden. He erected a derrick, like those shown in the plate, in order to work the petroleum, and within a very short time the district was covered with derricks. The result has been a complete transformation of part of the city. A quiet, beautiful place of homes is now an ugly, busy industrial town—one of the contributing sources from which our practical oilman of to-day draws his oil supplies.

THE PRACTICAL GROCER

A Manual and Guide for the
GROCER the PROVISION
MERCHANT and Allied Trades

BY

W . H . SIMMONDS . F . J . I .

With Contributions by SPECIALISTS
TRADE EXPERTS and Members of
THE TRADES

Illustrated by a Series of Separately-Printed Plates

VOLUME FOUR



THE GRESHAM PUBLISHING COMPANY
THIRTY-FOUR SOUTHAMPTON STREET STRAND W.C.
1905

WITHDRAWN
FROM CAMDEN PUBLIC LIBRARIES

62.1

T430917

CONTENTS

VOLUME IV.—OILS, WINES, AND SIDE-LINES

1. DEPARTMENTS

	Page
The Sell-everything Principle—Centralizing and Branching—A Forecast of Trade Development—Classification in Great Stores—A Typical Department Store—Arranging Store Departments—System of Trading	1

2. LICENSES

Use of the Royal Arms—Licenses for Hawking, Vehicles, Game, Plate, Stamps, Patent Medicines, Sweets, Refreshment Houses, Oil, Methylated Spirits, Wine, Spirits, Beer, Tobacco, &c.—Applying for Licenses—Hours of Selling—Bake-houses—Licensing Notes and Queries	13
--	----

3. THE OILMAN

Starting and Shop Arrangements—Storage—Lighting—Hawking—Lamps and their Care—The Wholesale Trade	27
--	----

4. OILS

Classification—Animal Oils: Seal, Liver, Whale, Fish, Lard, Neatsfoot, &c.—Vegetable Oils: Manufacture and Characteristics, Adulteration, Olive, Rape, Cotton-seed, Linseed, &c.—Solid or Semi-solid Vegetable Fats—Mineral Oils, their Geology, Origin, and Production—Lubricating Oils—Flash-point—Essential Oils—Volatile Oils, &c.—Oil Chemistry	42
--	----

5. WAXES, SOAPS, AND CANDLES

Tallow—Waxes described—Soaps and their Manufacture—Candles and Candle-making—Tapers—Night-lights	79
--	----

6. BRUSHES AND PAINTS

Brooms—Fibre and Bristle—Manufacture—Stocking and Selling—Paints and Paint-mixing—Ochres—Tints—Pigments—Water-paint—American Formulæ and various recipes—Raddle—Whitening—Putty—Gums and Gum-resins—Varnishes of various kinds, how made	103
--	-----

7. OILSHOP SUNDRIES

Earths and Stones—Polishing Materials—Blacking and Black-lead, with recipes—Metal Polishes—Glazes—Furniture Pastes—Dyes and Colours—Vegetable Colours—Inks, and how to make them—Glue, Manufacture and Tests—Marine Glue—Bird-limes—Various Cements and Adhesive Pastes—Matches and Fire-lighters—Laundry Blues—Washing Powders and Soap Powders—Soda—Sponges—Cordage	Page - - - - - 121
---	-----------------------

8. WINES AND SPIRITS

Alcohol and “Proof”—How Strength is Ascertained—How Wine is Made—Kinds of Wine—Champagne, Claret, Hock, Port, Sherry, &c.—Spirits—Liqueurs—Excise Regulations—The Wine Cellar—Racking, Fining, and Bottling—Buying Wines and Spirits—Agent or Bottler—Own Name and Brand—The Window—Handling Whisky—Agencies	- - - - - 145
--	---------------

9. BEER AND OTHER BEVERAGES

Brewing Beer and Stout—Varieties of Beer—The Beer Retailer's Cellar—Cider—Aerated Beverages—Mineral Waters—Home-made Beverages—Various Recipes—The Bottling of Minerals—Keeping Accounts in a Bottle Trade	- - - - - 178
--	---------------

10. DRUGS, MEDICINES, &c.

Regulations as to the Sale of Poisons—A Drug Department—Patent Medicines—Sale of Unstamped Drugs—List of Exemptions, &c.—The Grocer's Pills and Potions—Caution to Grocer Retailers—The Sale of Disinfectants, Preservatives, and Sheep Dips	- - - - - 194
--	---------------

11. “PROPRIETARIES”

“P.A.T.A.”—Fixed Minimum Prices—Own Brand Goods—Advice by a leading grocer on Packing own Goods—Attractive Packages—Trade-mark Registration	- - - - - 204
---	---------------

12. TOBACCO AND OTHER SIDE-LINES

The Tobacconist—Silver Goods—Window and Shop Arrangements—Handling Tobacco—Recipes for the Retailer's own Smoking Mixtures—Mixed Parcels—About Cigars—Judging and Conditioning Cigars—Pipes—Sticks—China and Earthenware—Glass—Hardware—Seeds—Fertilizers and Feeding Stuffs	- - - - - 207
--	---------------

13. FOOD LAWS

Food Law Administration—Important Acts of Parliament—Coffee—Tea—Other Foods—Sale of Food and Drugs Acts—The Laws Summarized	
---	--

and Examined from the Retailer's Point of View—Conditions on which Margarine, Butter, Condensed Milk, Cheese, &c. are Sold—Protection by Label and Disclosure—Analysis and Sampling—The Retailer's Defences— What is a Warranty?—The Position of Employees—Merchandise Marks Act	- 221
--	-------

14. SHOP AND TRADE LAW

Shop Hours Act and Employees—Seats—Children—Shop Rules—Acci- dents—The Workmen's Compensation Act—Larceny—Laws of Buying and Selling—Sale of Goods by Sample and Description—Weights and Measures Law—Weighing Paper with Goods—Proper Weights for various Wrapping Papers—County Court—Partners	- 242
--	-------

15. RAILWAY RATES

The Law—Rates and Classes—Railway Accounts—Specimen of a Re- ceiving Book—Example of how a Railway Account is Checked	- 250
--	-------

16. WHOLESALE MARKETS

Importation—London Sales—The Provision Exchange—Seasons for Goods—Dates of Arrival of various new Season Goods—Specimen of a Prices Chart	- 254
---	-------

17. THE PROPRIETOR

Fixing Profit—"Profit on Returns"—A Table for Calculating Profit on Returns—Methodizing a Business—Cash Checks and Analysis of Depart- mental Sales—Plan for Keeping constant Track of Profits and Stock—A Less Elaborate Plan for Stock-Watching—Specimen of a Grocer's Expenses Book—Specimen of a Printed Order Form to Secure Proper Guarantee with Goods	- 259
--	-------

18. PRICE LISTS AND ADVERTISING

Compilation of Price Lists—Some Quaint Matter for Price Lists—Garra- way's Eulogium of Tea—A Hint or Two for a Wine List—Humour in Regard to Credit—A Christmas List: Recipe for a Christmas Plum- pudding—Summer Lists—A Christmas Club—Retailers' Stationery— Advertising: Hints as to its Value—How to Draft Retailers' Advertise- ments	- 265
--	-------

19. GROCERS' ASSOCIATIONS

The <i>rationale</i> of the Association Movement—An "Old Hand" on Associations for Grocers—Arranging Prices—Some of the Advantages Obtainable from Combinations of Retailers—The Grace of the Grocer Company	- 270
INDEX	- 273

LIST OF ILLUSTRATIONS

VOLUME IV

	Page
THE OIL REGION OF LOS ANGELES, CALIFORNIA	<i>Frontis.</i>
LEADING MEMBERS OF THE TRADE - - - - -	24
ALDERMAN AMOS HINTON SAMUEL SHIRLEY	
ARTHUR J. GILES A. G. GRANTHAM	
OIL PLANTS - - - - -	54
1, Flax; 2, Cotton Plant; 3, Olive; 4, Castor-oil Plant; 5, Lavender	
SOAP MANUFACTURE - - - - -	92
The Laboratory at the Vinolia Company's Works	
GROCERS' HALL, LONDON - - - - -	102
The Staircase	
GROCERS' HALL, LONDON - - - - -	122
The Livery Hall	
LEADING MEMBERS OF THE TRADE - - - - -	140
WILLIAM REED SIR JAMES RECKITT, BART., J.P., D.L.	
WILLIAM GEORGE WATSON W. T. CROFT	
LEADING MEMBERS OF THE TRADE - - - - -	166
JEREMIAH COLMAN, J.P., D.L. SIR JAMES LOW, J.P., D.L.	
THOMAS W. M'MULLAN HARRISON BARROW	
A HOP-SAMPLING WAREHOUSE - - - - -	178
(Guinness's Brewery, Dublin)	
LEADING MEMBERS OF THE TRADE - - - - -	196
JOHN WILSON, J.P., D.L. PERCY T. CHIRGWIN	
ADAM S. FINDLATER, J.P. R. T. DUERDIN	
COMMERCIAL SALE-ROOMS, MINCING LANE, LONDON - - - - -	222
"GROCERS' CORNER", EASTCHEAP, LONDON - - - - -	256

THE PRACTICAL GROCER

OILS, WINES, AND SIDE-LINES

I. DEPARTMENTS

Allied to, and intimately connected with, the Grocery and Provision Trades which we have been discussing in detail in previous volumes, are nowadays not only the old-established businesses of the Oilman and the Wine and Spirit Merchant, the Italian Warehouseman, and the Bottled-Beer Seller, but quite a number of other departments of trade—such a variety, indeed, that “the Sell-Everything Principle” has become of late years a well-known theme amongst grocers’ societies. Every man being a law unto himself in settling what he shall sell in his shop—within, of course, certain restrictions laid down by the laws of the land—the modern grocer does not hesitate to leave the old tracks of trade if new ones recommend themselves as promising a reward for his enterprise.

The “Sell-Everything” Principle.

Few, indeed, are the men in these times who are content to plod on in one regular rut. It is true that there are limited companies, some of which have hundreds of branches scattered over the country, which deliberately keep to a restricted number of articles, some confining themselves to a few chosen goods that can be enumerated on the fingers of one hand. But the keen competition forced upon him by this kind of shop-keeping, with its advantages of large capital, large buying powers, manifolded shop-plans, skilled management, centralized control, and scientific system throughout, is the very reason why the grocer who has but himself to depend upon is compelled to apply his energies in many directions, and to be “all things to all men” in order to

succeed. Instead of tempting his customers with a few special lines and leaving them to go elsewhere for others they require, his chief concern is to sell them everything they require so as to give them no excuse for going elsewhere. Cautiously adding to his business new departments in which there is a profit to be made, laying himself out to supply his customers with as many as possible of the goods they need, he is constantly on the look-out for new worlds to conquer. Thus many grocers' shops

**Centralizing
and Branching.**

become by degrees small editions of Department Stores. The evolution of a successful grocer's business commonly takes two forms: it becomes more highly organized and it reproduces itself by throwing off branches. As with those interesting little creatures the microbes, some businesses seem to split, and split, and split again—new shops here, new shops there, in a constantly widening ring, until there are so many "branches" that the owner is forced to turn himself into a "company" to keep them all going. But while this process may go on as one of mere reproduction by fission, as it were, with no more adjustment to environment than lies in arranging the stock to suit the needs of the locality or the circle of customers to whom it appeals, there is also in many cases a centralized evolutionary process, a process of central organization by subdividing the main business into departments under a single roof, and this may go on until the proprietor is not only a Grocer and Provision Merchant but an Off-license holder, an Oilman, a Tobacconist, a Druggist, an Ironmonger, a Green-grocer, a Baker, a Caterer, a China Dealer, a Stationer, a Bookseller, a Seed Merchant, a Fancy Goods Dealer, a Draper, a Cutler, a Boot and Shoe Seller, a Newsagent, or what not. The world's his oyster; he can sell practically what he pleases. In short, the latter-day Grocer is in some danger of merging himself into a class in which he could only label himself a General Distributor.

Whilst modern business lends itself to this kind of shop-keeping, the necessity for exact and minute technical knowledge is not thereby got rid of; it is merely shifted back a little from the retailer to the middlemen who supply him. "The Jack-of-all-Trades" is commonly reputed to be good at none, and certainly there is more to be learnt in any single trade now than ever

there was. But the truth is, that this mode of trading, the trading of the General Distributor, has become a trade in itself, having its own special science, and requiring a high degree of capacity as well as most elaborate system for successful prosecution. Given a capacity for organization and direction, a trader will seldom be at a loss for expert subordinates to conduct the practical work of his new branch.

Upon this subject of development in the Grocery trade some pertinent observations were made in a paper read before an International Grocers' Congress at Paris, by Mr. Finley Acker, a well-known "Captain of Distribution" whose head-quarters are at Philadelphia. "The outlook," said this gentleman, "based upon the developments of the latter half of the last century, warrants us in expecting that the future of the grocery trade will represent something more than mere shopkeeping, which is commonly understood to be the mere selling of wares for which the buyer asks; it suggests the elevation of the trade to the dignity of high-grade merchandising, which involves the study and selection of goods, the possible creation of new varieties and fancies, or the direct manufacture of many articles; and it may mean not only a technical knowledge of the nutritive, palatable, and digestive properties of each article sold, but also their best manner of preparation and serving, so that, instead of the buyer being obliged to depend upon chance information regarding the most desirable food, he can depend absolutely upon the merchant grocer for such in its most advanced form. To carry out this idea of the future in tangible form and to its fullest extent may require a staff of experts in hygiene, chemistry, cooking, catering, and even editing, in order that any question regarding the wholesomeness, chemical constituents, or preparation of food may be answered with intelligence and authority; while in addition a periodical publication of the latest food news will keep the readers reliably informed upon everything that will add to the delights and pleasures of the table. If this view be regarded as visionary I will merely assure the sceptic that this is being partly done even at the present time; but with the developing and perfecting of all forms of trading it is only reasonable to assume that in the largest grocery establishments of the future the above ideal will be found both practicable

A Forecast
of Trade
Development.

and profitable; and the evolution of the idea may include, in time, not only the sale of groceries, but also the sale of foods of every variety in both their raw and prepared condition; and the prepared foods may also be sold in the grocery restaurants to those who wish them, or served at their homes through an efficient catering department."

The multiplying of departments in a Distribution Store does not imply, as Mr. Acker was careful to recognize, that in any single department a lesser degree of technical knowledge and skill can be tolerated. Quite the contrary. In food, for instance, "the table luxuries of a generation or two ago have become the apparent necessities of the poor to-day; and successful manufacturers realize that the taste of the public is becoming more and more critical, and not only must the palate be gratified, but the eye must be pleased as well; and they are beginning to realize that the ingredients used in their products must be at least harmless, if not nutritious, and that cleanliness and sanitary regulations must be observed in the process of manufacture. The world to-day is better informed than ever before regarding quality; and wide-awake manufacturers are realizing that if they can produce food products that are as wholesome as, and particularly if they are more palatable than the housewife can prepare in her own kitchen, and if they can furnish such products at nearly the cost of home manufacture, many housewives are ready to purchase such products, and thereby relieve themselves of what they regard as household drudgery. If this be the case—and it seems to be verified by the experience of the past decade—we are justified in believing that the grocery trade of the future will have even a larger variety of food products to sell than they have in the past, and in consequence the grocery trade should increase both in variety and volume, even though the number of buyers should remain the same." Upon such reasoning Mr. Acker arrived at the following set of conclusions:—

(1) The world is big enough and varied enough to support dealers of all varieties and dimensions, and the right should be accorded to every individual to develop his business in whatever direction and to whatever extent his particular genius directs.

(2) The principle of rendering the best possible service to the buyers should dominate every dealer, and such principle must be employed by all who hope to withstand keen competition.

(3) The perfection of the canners' and preservers' art, and the reasonable prices at which such goods can be furnished, justifies the expectation that the stock of the grocer and his consequent sales will be gradually enlarged.

(4) The study of food and its relation to the health and strength of the community is assuming greater importance, and is consequently lifting the grocery trade to a higher plane of importance and dignity.

(5) The possibilities in the manufacture and sale of new food products, and the possibilities in the development of the business into new and extensive fields, command the respectful consideration not only of the small shopkeeper, but of the extensive merchant as well.

We can imagine some incredulous reader exclaiming, "What, the *small* shopkeeper—surely this cannot interest him, save as bad news!" But the argument is, that in any case the small shopkeeper must "keep up with the procession", and that he can do so if he avails himself of the helps at command. Individual attention is, of course, his grand stand-by principle for keeping his customers when he has the goods to supply them; and for procuring those goods on the best possible terms, so that he may compete with buyers of large capital, his salvation lies in the resort to the principle of combination. Mr. Acker stated in his paper, that in the United States, in the large cities, the small trader "may purchase many of the staple and proprietary articles from a Retail Grocers' Exchange at almost as low a price as the largest jobber, as he is charged only 1 or 2 per cent more than the lowest price to the jobber. If", he added, "the small traders work together, I see no reason why these Exchanges should not eventually include the sale of all such goods as are commonly sold in the grocery line, and when this is done the small dealer can buy approximately as cheap as the department stores or the very extensive grocer; and if this be the case, it will be his own fault if he permits his larger rivals to capture his trade in his own local territory."

Fate of the
Small
Shopkeeper.

With this consolation for the small trader, we may proceed to discuss some of the departments and side-lines which his business may ultimately include, or which perhaps already form, with some readers, the main business itself. In the present chapter by way of introduction it will be convenient to say a few words respecting the arrangements of department stores; then to give a brief description of one of these businesses in a provincial town; and in a further chapter to state in detail the licenses required for various

departments, and the means whereby they can be obtained by the trader.

The great metropolitan Department Stores are not the concern—except as they divert trade from others—of the readers for whom these volumes are intended, but their method of classification may be interesting to some. The departments of the Army and Navy Stores are arranged thus:—

**Classification
in Great
Stores.**

1. Grocery, Provisions, French and Italian Goods, Fancy Fruits, Beer, Mineral Waters, Oil, and Coal.
2. Tobacco, Cigars, Cigarettes, Pipes, Cigar and Cigarette Cases, Vesta Boxes, Cabinets, and Smokers' Requisites.
3. Wines, Spirits, and Liqueurs.
4. Ironmongery, Gas-fittings, Lamps, Turnery, Brushes, Combs, Baskets, Cooperage, Leathers, Sponges, Oriental Goods, Garden Implements, Barrack Furniture (sale or hire), Saddlery, Horse Appointments, Waterproof Goods, &c.
5. Stationery (Plain and Fancy), Printing, Artists' Colours, Mathematical Instruments, Pictures, Picture Framing, &c.
6. Drugs, Perfumery, Toilet Requisites, and Surgical Instruments. Prescriptions Dispensed.
7. Jewellery, Silver and Electro Plate, Table Cutlery, Clocks, Watches, &c.
8. Guns, Revolvers, Ammunition, Natural History Appliances, Taxidermy, Tools, Boats, Fishing Tackle, &c.
9. Drapery, Hosiery, Mantles, Perambulators, Ladies' and Children's Outfitting, Baby Linen, Dress Materials, Shirts, Umbrellas, &c.
10. Tailoring, Naval, Military, and Civil Uniforms, Accoutrements, Craft Clothing, Ladies' Tailoring, Hats, Medals, &c.
11. China, Glass, and Earthenware.
12. Portmanteaus, Bags, Locks, Bicycles, Tricycles, Cycling Accessories, Walking Sticks, Pocket Cutlery, Outdoor and Indoor Games, Magic Lanterns, Entertainments, Toys, &c.
13. Books, Bookbinding, Music, Pianos and other Musical Instruments, Musical Boxes, Foreign and Colonial Postage Stamps.
14. Dressing Bags and Cases, Optical and Scientific Instruments, Fans, &c.
15. Refreshments, Catering, Ball Suppers, &c.

An auxiliary company takes charge of the most perishable goods in a "Fresh Provision Department"—a branch run by various large company stores. Such a department usually includes meat, fish, poultry, general provisions, tinned goods, vegetables, fruit, and flowers. In these huge stores it is common to find stress laid upon coffee roasting and grinding, the supply of fresh provisions daily from direct sources, prompt delivery arrangements,

weekly price-lists, and the posting in the store itself of the prices daily. In one of the largest American stores the fourth floor is devoted to groceries and provisions, meat and fish; in one corner is a dairy where butter is made "while you wait"; and at several convenient points men may be heard giving lectures on how to prepare special dishes. Endless moving belts tap each counter where goods are wrapped, and quickly and noiselessly convey all packages to the delivery department, depositing them there on a circular table, from which radiate other endless belts to convey the goods to the proper section for delivery by wagon. The great principle in such stores is the application of the best possible method for rendering complete and efficient service to the customer, whose convenience is studied in every way. There are broad aisles, easy stairways, moving stairs, elevators to all floors, cash railways on the pneumatic principle for obtaining change quickly; places to sit, wait, meet, talk, rest, lunch, or take tea in; shopping is thus made easy and comfortable, and even attractive, and with regard to the goods sold, every article is guaranteed to be exactly as represented, or the money is cheerfully refunded.

Let us turn now to the Department Store of a type more closely interesting our readers as occupying an intermediate position. It is a typical establishment in a fashionable English country town, and is neither a "Co-operative" nor a "Company" shop. It resembles its larger competitor in the great variety of its stock, the many departments massed under one roof, and in many details of management, but it has one important advantage over it in one point, and that is where the resemblance to the smaller grocer comes in, viz. it retains in a large measure the *personal relationship* as between proprietor and customer. This important factor, which exists in the highest degree in the ordinary grocer's business, and is entirely absent in the largest "stores", civil service or otherwise, is a strong element in the business under review. The proprietor or proprietors are men of standing in the town and district, well-known to their customers, with many of whom they are able to have reciprocal business transactions. Thus, while they cannot exercise the same immediate personal feeling over each individual customer to such an extent as the smaller grocer with his less intricate business, yet they are able to bring the power of "per-

A Typical
Provincial
Department
Store.

sonality" to bear very strongly, and obtain a large amount of "confidence" which cannot be obtained by the larger and rival stores in London or elsewhere. Hence in a fashionable neighbourhood where many residents are retired civil or military officers who have a natural leaning towards the "service" stores in London, the well-conducted departmental stores run by local people manage to carry on a large and successful business. Doubtless in such a town leisured people find a peculiar charm in being able to make so many of their purchases under one roof, and in passing from one department to another to feast their eyes on the tastefully-displayed merchandise. It is not so much the particular articles they have come to order that interest them, as that in doing so they see under the best conditions many other things that appeal to refined tastes, which otherwise they would have to walk whole streets to see. And so our "Stores" becomes at once a place for one to take one's friends, and to meet one's friends; a fashionable resort, a lounge, an art-gallery, a bazaar, and a delightful promenade. This very fact leads to many purchases that would not otherwise be made, and the proprietors recognized the silent salesmanship of artistically-arranged wares when they printed the notice at the entrance, "Visitors are invited to walk through the Stores and inspect the stock, without being requested to purchase".

Needless to say our store occupies the finest "corner position" in the town where the traffic is thickest. The windows take up a considerable frontage in two main streets, the entrance being at the corner through plate-glass folding-doors set back in a deep bay. The building is four stories high, the first three floors being fronted with large plate-glass windows and used as show-rooms, and the upper floor is used for stock-rooms and packing-rooms. Each window is allotted to some special department, those nearest the entrance, and the largest ones, being taken up the one by groceries and the other by provisions, while others are dressed, one with electro-plated goods and cutlery, another with books, another with tobacco and cigars, another with patent medicines, and so on. The upper windows of the store are also made attractive as far as their elevated position allows them to be. A liveried porter or *commissionaire* opens the door to us, and, if necessary, takes charge of cycle or dog while we make our tour of the Stores.

In a small office, ingeniously concealed by a display of fancy articles, a responsible member of the firm can—unseen by them—see everyone who passes in or out of the store, and also commands a view of the major portion of the ground floor.

The grocery and provision departments take up by far the largest amount of space, and are undoubtedly the most important branches of the business under notice. Tea and coffee are given a separate department, the latter being made a great speciality by our Stores, which, with a large volume of trade, can give special facilities for roasting and grinding the fragrant berries impossible to the small grocer. Green fruit is, of course, made quite a separate department, that includes, besides the usual items under that head that most modern grocers stock—choice English hothouse grapes, strawberries and other “soft” fruit in season, cucumbers, tomatoes, and the choicer kinds of vegetables. The provision department naturally occupies a space next to the grocery, and is fitted throughout with cool marble shelves and counters. In some stores there is a fresh-meat department, but this is not very general in the class of stores we are describing, to the artistic arrangements and *tout ensemble* of which fresh meat, like fish and poultry, does not seem to lend itself. The wine and spirit department is an important and a large one, and the other departments on the ground floor are those for bread and confectionery, tobacco and cigars, and for patent medicines. On the upper floors we find departments for toys and games, books and stationery, hardware and ironmongery, and perhaps a circulating library, café and refreshment-room, china and glass, clocks and watches, and electro-plate departments.

Arrangement
of the Store
Departments.

The department store being, as a rule, a gradual growth, it is obvious that various departments will be created as time goes on, and that there will be no rule regulating all stores alike. One may, for instance, find a cycle department very successful, another a separate department for portmanteaus and travelling-bags, or for toilet requisites, or for artists' materials. Departments may in themselves come to be subdivided as trade grows. For instance, the stationery department may divide itself into commercial stationery, including ledgers and account-books, and family or private stationery. A flourishing trade for commercial stationery

might very well lead to another department for office furniture—roll-top desks, copying-presses, type-writing machines, &c., and the private stationery suggests possibilities for relief-stamping, dye-sinking, the printing of mourning and wedding cards, and so on. The establishment of a drug and patent medicine department may lead to one for dispensing, or another for photographic materials and apparatus. Dispensing is, however, a trade that seems to generally evade the grasp of the department store, probably on account of the highly-technical knowledge required. Toys and games may be included in one department, or may develop into several, according to the demands of the customers; outdoor games, with all the paraphernalia of tennis, football, cricket, golf, &c., may well take a separate place of their own; and another one may possibly be allotted to sportsmen's requisites (a trade for which might arise from the outdoor games), such as guns, fishing-tackle, &c. Enough has been said, however, to show how a department store will, if successful, naturally grow and extend in various directions.

In our typical fashionable store we need hardly say that all the fittings and appointments are of the best, and everything is arranged so as to save time and confusion, while at the same time displaying the goods in the various departments to best advantage. Large glass cases protect from dust such goods as would be easily damaged by it. The whole of the place is heated by hot-water pipes, and lighted by electricity, which in the case of many large stores is produced by engine and dynamos on the premises. An ample supply of hose-pipes and hand-grenades affords means for dealing promptly with an outbreak of fire, a number of the staff being drilled in the use of these appliances. A lift for passengers and another one for goods provide quick transit from one floor to the other, and an elaborate system of "cash railways" enables every assistant to give change and receipt without leaving his own counter. Invoices are, of course, given with every purchase, and in a store of this kind a considerable amount of dissecting and checking of the accounts becomes essential. The main offices are to be found in a central place on the ground floor, and, besides a counting-house and general enquiry office, embrace private offices for the proprietor and his chief lieutenants. These are connected with the outside world, as

well as with the forwarding department, the stock-rooms, and the leading departments, by telephones and speaking-tubes. Strict rules have to be observed by all the employees, and "method" is one of the first and foremost laws of the department stores.

The buying is necessarily distributed largely amongst the various heads of departments, but the proprietors personally control the buying for the chief departments—grocery or drapery as the case may be—from their own office. System of Trading. The trade is carried on on a "cash" basis, but to save customers the trouble of paying separately for every little order, and the risk of losing money in the post or by messengers, "deposit accounts" are made use of by many of the regular *habitués* of the Stores. By this system a sum of money not less than £2 is deposited with the Stores, in return for which goods are booked to the customers' account, and a pass-book is given, which is balanced at regular intervals according to the arrangement made at the time of deposit. All goods are delivered free by motor and horse vans in the town and for some miles round, and for greater distances carriage is paid to the customer's nearest railway-station on orders of certain amounts and upwards, according to distance. Many customers coming into town by rail and returning the same day after doing their shopping, prefer to take their purchases home with them, and to facilitate this the Stores will pack them neatly, send them to the railway cloak-room, and provide cloak-room tickets free of charge.

An exhaustive price-list is published, generally twice in the year, with an occasional supplementary list at special times, such as Christmas; and in some cases the list is made extra interesting by the insertion of items of local information, time-tables, railway fares, and occasional paragraphs as to the preparation and use of various articles of food, &c. In addition to the articles in the list, innumerable though they are, the Stores are always ready to obtain other goods in reasonable quantities, the object being to get patrons to see that if they cannot get any certain article at the Stores they cannot get it anywhere. The prices quoted are as low as competition makes them, but a store like this does not depend so much upon the "cutting" of prices to draw custom, but rather upon the general out-turn of the goods, the smartness of the premises, and the attention to detail that a good system of

business ensures. Special prominence is given to "own-name" goods, such as preserves, pickles, and the hundreds of ready-bottled and tinned goods now in daily demand. The firm's name is only put upon the best articles, and the effect of this policy has been largely to destroy the prejudice which the public formerly exhibited in favour of certain "proprietary articles", so that so far from there being any difficulty in selling these "own-label" goods, they have in many instances almost entirely supplanted the older brands. Many goods, such as salad oil, ketchups, curries, corn-flour, cocoas, &c., are bought in bulk, and packed on the premises into the various-sized bottles and packets.

The expenses of an establishment of this kind, where everything must be "up-to-date" and of the very first class, are necessarily heavy; but the turn-over is very large—goods can be bought on the very "rock bottom" of price, and there is always a "boom" on in one or more of the many departments of this extraordinary development of modern fashionable "shopping".

Whilst our Store just described has given us a conspectus of the varied departments commonly embraced in such establishments, it goes without saying that there are many large **Business Divisions.** shops where the combination is totally dissimilar. To classify these there is no occasion. Let us take an ordinary first-class family grocer's or general food distributor's business and note the departments comprised in its price-list. We have before us the list of a provincial house of good standing, which we find has the following sections:—

1. Teas and coffees. 2. Groceries and Italian goods. 3. Provisions. 4. Green fruit. 5. Fancy goods. 6. Brushes. 7. Ironmongery. 8. Toilet requisites and perfumery. 9. Wine, spirits, bottled beer, and mineral waters. 10. Patent medicines.

In a second list we have other departments for—11. Bread and pastry. 12. Lamps, stoves, and oil. 13. China, glass, and earthenware. In a third we have—14. Cigars and tobacco as a department, and 15. Stationery. The grocery department commonly includes a wide range of goods, an enormous number of different articles being stocked in the larger shops and classified under this head. Many of these are "proprietary" articles—articles ready packed under a name or device.

2. LICENSES

We may now conveniently summarize the special conditions laid down by the law as necessary to be observed before *starting* various businesses or business departments of the kind with which our readers are concerned. The laws applicable to such businesses when they are being actually carried on are discussed separately; we are concerned here merely with the licenses or other sanctions required in starting.

To begin with, no license whatever is required for carrying on the trade of a **grocer**, a **tea dealer**, or a **provision merchant**. Yet it is possible that some *sanction* might be required; a man cannot offhand turn his dwelling-house into a shop, for by so doing he might be contravening the terms of a lease, it being a common stipulation that property shall not be used for shops, or that a shop of a certain kind shall not be opened to interfere with a grant to someone else. But assuming that our would-be grocer or provision dealer has made a proper arrangement with his landlord, he is under no other disability. Perhaps, ^{Use of the} however, as shopkeepers often have a notion that the ^{Royal Arms.} Royal Arms is a useful decoration for a new shop, it may be well to mention here that, unless duly authorized (that is, by the issue of a royal warrant of appointment to the trader), such use of the Royal Arms is quite illegal, and can be stopped with penalty upon the user.

When our grocer has begun to launch out, to increase his stock-in-trade by new classes of goods—as so many ^{Various} do nowadays—and to deliver them widely, it is neces- ^{Licenses} sary to be circumspect. For instance, he may or may not require—

A Hawker's license.
 A Carriage license.
 A Game-dealer's license.
 A Plate-dealer's license.
 A Stamp-dealer's license.
 A Patent Medicine Vendor's license.
 A Sweets license.
 A Refreshment-house license.

An Oil-dealer's license.
 A Methylated Spirit license.
 A Fireworks permit.
 A Wine license.
 A Spirits license.
 A Beer license.
 A Brewer's license.
 A Tobacco-dealer's license.

A **Hawker's License** is necessitated in certain cases by the **Hawkers Act 51 & 52 Vic. cap. 33**, which defines a "Hawking." "hawker" as being—

Any person who travels with a horse or other beast bearing or drawing burden, and goes from place to place or to other men's houses carrying to sell or exposing for sale any goods, wares, or merchandise, or exposing samples or patterns of any goods, wares, or merchandise to be afterwards delivered, and includes any person who travels by any means of locomotion to any place in which he does not usually reside or carry on business, and there sells or exposes for sale any goods, wares, or merchandise in or at any house, shop, room, booth, stall, or other place whatever hired or used by him for that purpose.

Thus everyone selling goods or taking orders for goods from samples away from his ordinary place of business would be a hawker. But the Act declares the following exemptions:—

It shall not be necessary for a licence to be taken out under this Act in the following cases; that is to say—

- (a) By any person selling or seeking order for goods, wares, or merchandise to or from persons who are dealers therein, and who buy to sell again.
- (b) By the real worker or maker of any goods, wares, or merchandise, and his children, apprentices, and servants usually residing in the same house with him, selling or seeking orders for goods, wares, or merchandise made by such real worker or maker.
- (c) By any person selling fish, fruit, victuals, or coal.
- (d) By any person selling or exposing for sale goods, wares, or merchandise in any public mart, market, or fair legally established.

Under these clauses we see that (unless any local bye-law or statute provides to the contrary) our grocer and provision merchant can sell in any public market or fair, and can "hawk" goods of his own making, or fish, fruits, victuals, or coal; while the first paragraph exempts commercial travellers from taking out a hawker's license in this country (although in most of the colonies they are required to take out a special license, in some cases at a heavy fee). The term "victuals" in (c) includes eatable groceries and provisions. In regard to oil, tobacco, and stamps, restrictions and prohibitions are noted further on. When the trade done is of such a nature that a hawker's license is required, note that such a license can only be used by the individual to whom it is granted, or his servant, who may travel with his master's license and trade for his master's benefit. A hawker's license expires in England and Ireland on March 31st.

Allied to this is the question of the **Carriage License**. Carriages are subject to a license duty according to the number of wheels they have; but we mention them only to point out that there is an exemption from the duty in the case of any wagon, cart, or other such vehicle used solely for conveying goods in course of trade, provided the vehicle is inscribed with the name, address, and business of the person, company, or firm keeping the same, in letters of not less than one inch in length. But these trade vehicles become liable to duty if they are used to carry the owner or the family without goods, except when sent gratuitously to carry passengers on holidays and special occasions.

Licenses
for Vehicles.

The **Game-dealer's License** is needed by those provision merchants who in the season sell game. To sell poultry, rabbits, woodcock, quail, snipe, landrail, or deer no license is needed; but to deal in British or foreign game the shopkeeper requires a £2 license (which cannot be held by the holder of an off-beer license), expiring on July 1st in each year. The District Council's authority is necessary. The term "game" includes hares, pheasants, partridges, grouse, heath or moor grouse, black game, and bustards. A dealer in game has to observe "close times", and to note that he must cease to sell or buy game ten days (one inclusive and the other exclusive) from the day on which it became unlawful to kill such game. Consequently, it is well to note that the shooting of *wild fowl and landrail* begins on August 1st and ends on March 1st; that of *grouse* begins on August 12th and ends on December 10th; that of *black game* begins on August 20th and ends on December 10th (except in Somerset, Devon, and New Forest, when September 1st is the opening date); that of *partridges* begins on September 1st and ends on February 1st; and that of *pheasants* begins on October 1st and ends on February 1st. The sale of hares is prohibited from March to July inclusive. It is hardly necessary to remark that a **game-dealer's** license is quite a different thing from a **game** license, which merely gives the right to kill game within a specified period, the length of which depends on the amount paid.

Game-dealing.

A **Plate-dealer's License** we have mentioned next in the list because "watch clubs" are sometimes run in association with grocers' shops about Christmas-time. Secretaries, managers, or collectors of watch clubs, who receive

Plate and
Stamps.

subscriptions and pass on the watches, must have a plate license, as they do not come within the exemption of travellers. In order also to give gold or silver articles in exchange for coupons issued to purchasers of goods, it is necessary to have a plate license. The plate license costs £2, 6s. *od.* for gold above 2 dwts. and under 2 ozs., or silver above 5 dwts. and under 30 ozs.; above these quantities it costs £5, 15s. *od.*

Since many grocers act as sub-postmasters, and others sometimes aspire to do so, we note that a **Stamp License** is necessary to sell stamps; application has to be made to the Head Office in the applicant's district. It is illegal to hawk stamps, even for a person licensed to sell them.

Again, many grocers and general shopkeepers, both small and large, sell household remedies and **Patent Medicines**. The law—which we explain more in detail in a subsequent chapter—deems certain remedial preparations to be liable to stamp duty and others not. The grocer and the qualified chemist are not quite on a par in this branch of trade, as will be seen by those interested; and for both there are certain points to be very particularly observed. It will be sufficient here to warn the trader inclined to deal with these goods that he must refer to the special chapter on **Drugs** to see how far he can sell drugs, &c., without holding a patent medicine license, and that even with a patent medicine vendor's license he is not entitled, unless he be a qualified chemist or druggist, to sell scheduled poisons, or patent medicines containing such poison. So far as the license itself is concerned, it is required for each set of premises where dutiable medicines are made or sold; every proprietor, maker, or compounder must take out the license, also those who sell entire drugs under certain conditions. The license to sell patent medicine costs 5s., and expires each year on August 31st.

A **Sweets License** means, in fiscal phraseology, a *Sweet-wines* license, not the “goodies” of the juvenile. “Sweets” or “made wines” are defined by the Act 52 and 53 Victoria, cap. 42, sec. 28, as “any liquor made from fruit and sugar, or from fruit or sugar mixed with any other material, and which has undergone fermentation in the manufacture”. Thus the Sweets license falls more properly to be dealt with under the

head of "Wines" below; we mention it here merely to point out that the question of fermentation makes all the difference—or, rather, the degree of alcohol created by the fermentation. No license is necessary for the sale of such beverages as aerated waters or spruce or black beer, unless they are drunk ^{Aerated Waters.} on the premises between 10 p.m. and 5 a.m. Nor is a license necessary for the brewing or sale of *fermented* beverages if they do not contain more than 2 per cent of proof spirit; and in the case of ginger and herb beers, or so-called non-alcoholic beers, proceedings are not instituted against unlicensed brewers or retailers when the amount of proof spirit does not exceed 3 per cent. For most medicated wines a wine license is required; the test is the amount of proof spirit—unless some poisonous drug is included, in which case the wine cannot be sold at all by the grocer. With regard to **Aerated Waters**, the bottling of these is subject to special rules under the Factory and Workshop Acts. These waters cannot be sold to be consumed *on* the premises after 10 p.m., unless a **Refreshment-house License** is taken out. In England and Ireland "Refreshment Houses" are a distinct class from public-houses, being houses for ^{Refreshment-house License.} the supply of food, and which may be kept open between 10 p.m. and 5 a.m. The year for this license begins on April 1st, and the license costs a guinea or half a guinea, according to whether the value of the premises is over or under £30 per annum. If the shop is closed at 10 p.m. no license is required.

The **Oilman's Licenses** form our next group. Here the important question is, "What is the 'flash-point' of the oil handled?" Under the Petroleum Acts, 1871 and 1879, the name ^{Oilman's Licenses.} "petroleum" has a special meaning, namely, any "rock oil, Rangoon oil, Burmah oil, oil made from petroleum, coal, schist, shale, peat, or other bituminous substance, and any other product of petroleum, or any of the above-mentioned oils", which, when tested in a manner set forth in a schedule to the Act of 1879, gives off an inflammable vapour at a temperature less than 73° Fahr. It includes also mixtures of petroleum with other substances—such as india-rubber solutions—if the flash-point is below 73°. Now, burning oils, such as the oilman commonly handles, have as a rule a flash-point above 73° Fahr., consequently do not come within the definition "petroleum". Lamp oils should never

flash as low as 73° ; if they do, they are not safe to use. No license is required for their sale if the flash-point is above 73° . But to those spirits which come within the above-quoted definition, including benzine and petroleum ether, the Act applies, and its effect is to place the storage, transport, and sale under the control of the local authorities, who can impose stringent conditions. These conditions are dealt with in the chapter on **THE OILMAN**. The fee charged by the local authority for the license is usually about 5s. Applications have to be made to the County Council or District Council officers, and information given in a specified form.

For the sale of **Methylated Spirit** a special license is required, and in the case of spirit dealers it must be sold in bottles. All methylated spirit sold has to be marked "**Methylated Spirit**". Retailers must hold a license (costing 10s., and expiring September 30th), which allows them to sell in quantities not exceeding 1 gallon; this license must be held for each set of selling premises. The license is not granted to distillers or rectifiers, or to retailers selling beer, spirits, or wine for consumption on the premises. The sale of methylated spirit between 10 a.m. on Saturday and 8 a.m. on the Monday following is forbidden. Not more than 50 gallons of it can be received or stocked at one time; nor must the retailer have on his premises any methylated spirit to which essential oil or other flavouring has been added.

Carbide of Calcium, so much used now in acetylene gas-lighting, was by Order in Council placed under the Petroleum Act, 1879, and licenses are required for its sale and use, although 5 lbs. of it may be kept, without a license, in hermetically-closed metal vessels holding each not more than 1 lb. The local authority issues the licenses, as in the case of "Petroleum".

Fireworks come under the Explosives Act, 1875, like gunpowder, nitro-glycerine, dynamite, gun-cotton, blasting powder, metallic fulminates, coloured fires, fog-signals, and other substances used or manufactured with a view to produce a practical effect by explosion or a pyrotechnic effect. Private persons are allowed to keep for their own use a quantity of gunpowder not exceeding 30 lbs., but the manufacture and retail sale of all explosives are strictly limited to licensed persons and registered premises. The local inspector of police is usually the person

to apply to for registration of a shop for retail sale of fireworks; and the fee is a shilling a year from the date of issue. In London the London County Council is the authority. Persons exposing fireworks for sale without being registered are liable to a penalty of £5. It may also be mentioned that a similar penalty is visited upon any person who sells gunpowder, fireworks, or other explosives to any child apparently under the age of thirteen.

We now come to the important group of licenses which relate to the retailing of **Intoxicating Liquors**, the “**Off**” Licenses and others. Our concern is not with the set of licenses “**Off**” which confer the power to sell intoxicating liquor for consumption on the premises, but with those which enable the grocer to supply his customers with beer, spirits, or wine for consumption away from his shop. For the sale even of most of the medicated wines a wine license is required. To begin with, it may be noted that although our grocer’s lease may specify that he shall not use his premises as a public-house, or for the retail of spirits, that does not debar him from holding a grocer’s wine and spirit license. Besides the Sweets License, which we have already mentioned, a grocer may obtain off-licenses—that is, licenses to sell for consumption off or away from his premises—for (1) beer, (2) wine, (3) spirits, (4) cider and perry.

In regard to **Beer**, to remove any misconception we may premise that the brewing of one’s own beer is only permitted under duty. Brewers of beer for sale pay a license duty of £1, whilst those who brew for their own consumption pay according to the rental of their premises, unless these are of less than £8 a year, in which case the occupier may brew free. The beer itself is also subject to duty—so much upon every 36 gallons of worts, with an exemption up to £15 rental unless the person brewing is a farmer who wants to brew for his labourers. The term “beer”, used as here in regard to duty and license, includes ale, porter, spruce beer, black beer, and any other description of beer, also any substitute for beer if it contains more than 2 per cent of proof spirit. Those who deal in beer, then, require (unless they are brewers selling from their brewery) a license for such dealing. There are three such licenses which we may notice, namely: (a) The *Beer-retailer’s Off-license*, which enables the holder to sell beer to be drunk off the premises, provided that not more

than $4\frac{1}{2}$ gallons, or 2 dozen reputed quarts, be sold at a time (for this a certificate must be obtained from the licensing justices); (b) the *Beer-dealer's License*, which is a wholesale license, permitting the sale of beer, provided it be in quantities *not* less than $4\frac{1}{2}$ gallons, or 2 dozen reputed quarts (this can be obtained on application to the excise officer); (c) the *Additional Beer-dealer's License* (England and Ireland), which may be held by a person already holding the wholesale license (b) (but for which a certificate must be obtained as in the case of "beer retailers"), and then enables him to sell in either wholesale or retail quantity. The beer-retailer's off-license in England costs £1, 5s., and is renewable on Oct. 11th every year, but the certificate must be obtained in February. The wholesale beer-dealer's license costs £3, 6s. 1d., and is renewable every July 6th (Oct. 11th in Ireland). The additional license (c) costs £1, 5s., and is renewable on the same date as the wholesale license. The beer-retailer's off-license (a) can only be held by a person residing on the premises so licensed; whereas the dealer's license (b) and the additional license (c) can be held for any number of premises besides those on which the holder himself resides. *Table beer* not exceeding $1\frac{1}{2}d.$ per quart in price can be retailed in the United Kingdom under a magistrate's certificate, costing 5s. only. This is renewable on July 6th.

Next, as to **Wine**. We have a *Wine Off-license*, which allows the sale by retail in any shop of wine not to be consumed on the premises, in quantities less than 2 gallons in reputed quarts ^{Wine.} or pint bottles only, but not less than a reputed pint. This costs in England or Ireland £2, 10s., and runs from April 1st; in Scotland, subject to magistrates' certificate (wine in any quantities, but sweets in less quantities than 2 gallons), £2, 4s. 1d. each year, beginning on May 16th. The *Wine-dealer's License*, costing ten guineas, allows wine to be sold in any quantity great or small, not less than one bottle. There is also a *Beer and Wine* (combined) *Retailer's License*, costing £3 in England and Ireland, for the sale by retail of beer and wine not to be consumed on the premises, the beer in quantities of less than $4\frac{1}{2}$ gallons, the wine in quantities less than 1 dozen reputed quart bottles at one time. These licenses run from Oct. 11th.

To sell **Spirits** requires a *Spirit-dealer's License*, costing ten guineas in any part of the United Kingdom; or this *plus* in

England the *Additional Spirit-dealer's License* costing three guineas; a justices' certificate is necessary. The first of these allows the holder to sell not less than two gallons at a time; while if he holds the second as well, he can sell a reputed quart bottle at a time, or as much more as he pleases; and foreign liqueurs in the bottles in which they are imported. An *Additional Spirit (foreign) Dealer's License* to sell liqueurs only costs two guineas, and applies to the whole kingdom. The license year begins on July 6th.

In **Scotland** a magistrates' certificate is required for a *Grocer's License* to sell any excisable liquor for consumption off the premises. A beer and wine license costs either £2, 10s. or £4, 4s. according as the annual value of the premises is below or above £10; a *Grocer's Spirit License*, which varies in cost according to the value of the licensed premises from £4, 4s. to £13, 13s., allows either spirits or beer to be sold for off-consumption. In **Ireland** there is a special *Grocer's Spirit License* under which spirits may be sold in quantities not exceeding 2 quarts, but no other excisable liquor. The Scottish Grocer's Licenses are renewable on May 16th, the Irish on Oct. 11th.

Cider and Perry can be sold without a license if the quantity sold at one time is $4\frac{1}{2}$ gallons or upwards, for consumption off the premises; but for retailing in smaller quantities, in England, a license which costs £1, 5s. must be taken out.

Licenses are granted, so far as the magistrates are concerned, at the General Annual Licensing meetings or their adjournments, the date being published usually by affixing a notice to church doors. They are held in England within the first fourteen days of February. The *Dealers'* or wholesale licenses can be obtained direct from the excise authorities without a justices' certificate—as can also the sweets-dealer's license. But under the Act of 1902 none of the English licenses to *retail* intoxicating liquor can be held without a certificate from the magistrates. By the Licensing Act of 1904 for England and Wales the power of refusing renewal of an on-license for reasons other than misconduct is transferred from the local justices to Quarter Sessions, and is limited by compensation provisions.

Excepting renewals of ante-1902 licenses in England, and ante-1900 licenses in Ireland, the magistrates now appear to have

complete discretion regarding all retail off-licenses held by grocers throughout the United Kingdom.

In **applying for a new license** the applicant has to draw up a notice in writing giving his name and address, and stating

the nature of the license or licenses he asks for, and

Applications. the situation of the premises for which he requires

them. This notice he must serve on one of the parish overseers, the clerk to the licensing justices, and the local superintendent of police, at least twenty-one days before the date of application (excluding the days of serving the application); he must also, within twenty-eight days of the date of application, affix a copy of his notice on the door of the premises to be licensed, and a door of the parish church or chapel, and see that in both instances it is maintained on the doors on two consecutive Sundays from 10 a.m. to 5 p.m. Also, he must advertise his notice in a newspaper circulating in the district wherein the premises are situated on some day not more than four weeks and not less than two weeks before the proposed application, and on such day or days, if any, as may be fixed by the justices for the purpose. These notices and dates are of prime importance; any defect or non-compliance is fatal. A petition should also be drawn up to present to the justices, and having been signed by as many as possible of the applicant's neighbours and customers, it should be lodged with the clerk to the justices a few days before the sessions. The applicant when he attends before the magistrates must be prepared to prove that all the notices were duly served and posted up. The notices to the overseers, justices' clerk, and superintendent of police it is allowable to send by post, and to prove the service of these it is sufficient to prove that the letters were correctly addressed, prepaid, and posted. Before the magistrates, witnesses as to character may be required, and it is well to have them in attendance, as the grant of a new license may be opposed in court without formal notice. *The Grocer Diary* quotes a suitable form to use when applying for a new license. The petition to the justices should be signed by residents and likely customers—they need not be householders. If the license is granted, certain small fees have to be paid at the court; the clerk, for instance, is paid 5s.; the amounts are fixed by law.

Note that all off-licenses have to be confirmed at least twenty-

one days after their being granted. All licenses have to be renewed annually. On the licensed premises the name of the owner must be endorsed. A license cannot be held by a minor or a married woman, although it may by a widow. Certain important restrictions have also to be observed respecting the premises—which, by the way, when licensed can be entered by the police at any time. Off-license holders may sell liquors at all times when licensed houses are open, but only then, and further restrictions may be placed upon the license by the justices. They must not sell in prohibited hours, even in cases of sickness. That is to say, if in the country (England), they must not sell on week-days before 6 o'clock in the morning or after 10 o'clock at night; on Sundays they can sell only between 12.30 and 2.30, and then close till 6 p.m., at which hour they may open and continue so till 10. In a town or populous place, or in the Metropolitan Police district, an exact hour is allowed each week-night; and in the Metropolitan district the hours for selling are 5 a.m. to 12.30 a.m. on all week-days except Saturday, when the closing hour is midnight; Sundays 1 p.m. till 3, and 6 p.m. till 11 p.m. In Scotland there is no selling on Sunday. Christmas Day and Good Friday are reckoned as Sundays, and the days preceding them as Saturday unless Christmas Eve happens to be Sunday. Although the off-license holder must only sell liquors at these times, he is not obliged to close his premises at other times if he does not expose alcoholic beverages for sale.

Hours of
Selling.

As regards the **sale of Beer** by off-license holders, the liquor may be in bottles of any size or by draught if the total amount is that which the license allows. Holders of beer off-licenses are often in the habit of taking orders for beer at their customers' houses, and even of receiving payment there when the beer is subsequently delivered. These two operations are allowable, but only when they are distinct. That is, the person who receives the order for the beer at a customer's house cannot legally hand over the beer then and there and receive the money for it. The customer's house is not his licensed premises. On this point of taking orders for alcoholic liquors apart from the premises actually licensed, the law has been laid down in *Pletts v. Beattie* and *Stephenson v. Rogers*. The gist of it is, that the acceptance or refusal of the order, and the distinct appropriation of the goods

Orders for
Beer, &c.

for it, must take place upon the licensed premises. If the order is accepted conditionally to be forwarded to the licensed premises, and the goods are distinctly appropriated to the customer by labelling upon the licensed premises, the sale is concluded on the licensed premises, and the subsequent payment at the purchaser's house when the goods are delivered makes no difference. The order may be sent to the licensed premises by post-card. Another point to be borne in mind is that, under the Intoxicating Liquors (Sales to Children) Act, liquor must not be sold to children under fourteen except in bottles or other vessels (not less than a reputed pint) corked and sealed so that the cork, plug, or stopper cannot be withdrawn without breaking the seal.

Finally, we have the **Tobacco License**. A publican's tobacco and snuff license runs with his spirit license; all other dealers in tobacco and snuff have to take out a license every 5th of July. The holder of a tobacco license is supposed to notify it in writing over the shop-door or other part of his premises, and, as this excise license is granted for one distinct set of premises only, a separate tobacco license has to be obtained for each shop where tobacco is sold. Observe that any person who hawks or offers for sale tobacco or snuff in the streets or highways subjects himself to a penalty and forfeiture of the goods, and may be arrested and taken before a magistrate by any officer of Customs or Excise.

The trader who thinks of adding **Baking** to his business should note that, like slaughter-houses, bake-houses require the license of the local authority on sanitary grounds. The Factory Act lays down important regulations as to bake-houses. It is stipulated that—

No water-closet, earth-closet, privy, or ashpit may be within, or communicate directly with, the bake-house. Any system for supplying water to the bake-house must be separate and distinct from any system for supplying water to a water-closet. No drain or pipe for carrying off fœcal matter or sewage matter may have an opening within the bake-house. No room or place may be used as a bake-house if on sanitary grounds it is unfit for such a purpose. The bake-house is to be kept free from effluvia from drain, privy, or other nuisance; not to be overcrowded, and to be ventilated so as to render harmless any gases, dust, &c., that may be generated in course of manufacturing processes. In case of injurious dust the Inspector may require a fan to be used. A place on the same level with the bake-house, and forming part of the same building, may not be used as a sleeping-place unless it is effectually separated from the bake-house by a partition extending from the floor to

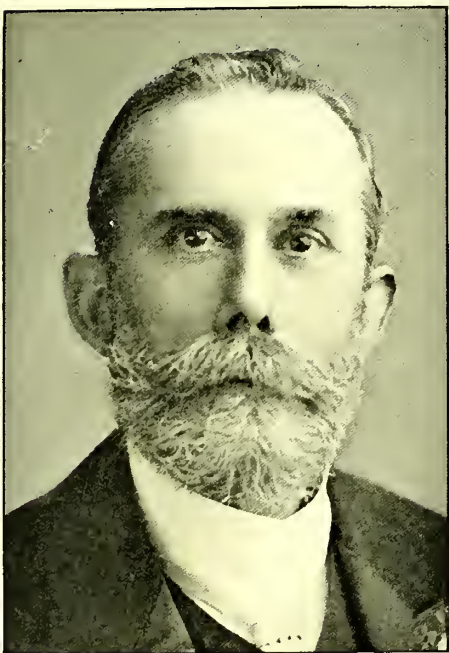
Alderman AMOS HINTON is a prosperous Middlesbrough grocer, who has become widely known as one of the leading lights of the central organization of the retail grocers' associations—the Federation. In connection with this society he holds one of the most responsible positions, that of chairman of the General Purposes Committee, the "Trade Parliament" as it has been called. This body, which is composed of representatives from all parts of the kingdom, meets quarterly in important centres, and is the most powerful of all the trade organizations. Mr. Hinton has been several times re-elected to the chairmanship of the committee, in which capacity, as well as in his evidence before government committees on behalf of the Federation, he has earned golden opinions. He has taken an active part in the local affairs of Middlesbrough, and is a justice of the peace.

Mr. SAMUEL SHIRLEY, Bristol, has taken an active interest in affairs pertaining to the grocery trade. He has been president of the Bristol and District Grocers' and Provision Dealers' Benevolent Society from its inception in 1897, and for a period was chairman of the Bristol Grocers' Association. He has also held the position of chairman of the Parliamentary and General Purposes Committees of the Grocers' Federation, and in 1900 was president of the Federation.

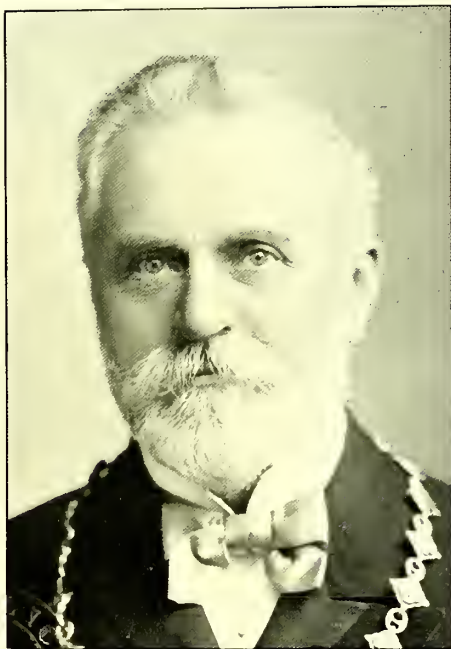
Mr. ARTHUR J. GILES is the able and popular secretary of the Grocers' Federation, having held that position for the past thirteen years. Few men are better known in the trade in Great Britain. Mr. Giles is also secretary of the National Federation of Off-license Associations, and of other important trade societies, not the least important of them being the benevolent fund connected with the Federation of Grocers' Associations, a fund he was chiefly instrumental in founding.

Mr. A. G. GRANTHAM, trading as Grantham & Co., was born at Leatherhead, Surrey, in 1852, and went to London when eighteen years of age. He took over the business now known as "Ye Old Black Friars Tea Shoppe", Blackfriars Road, London, in 1880. It was originally established in 1789, and the building is now mainly used as a wholesale and distributing depot to supply Grantham & Co.'s various branch shops in London. Mr. Grantham has filled various local offices, such as member of the old District Council, churchwarden, &c. He was a member for upwards of ten years of the council of the Metropolitan Grocers' Association, and was recently mainly instrumental in forming the London Retailers' Sugar Association, of which he is chairman, and which at the beginning of 1905 had a membership owning 4000 shops.

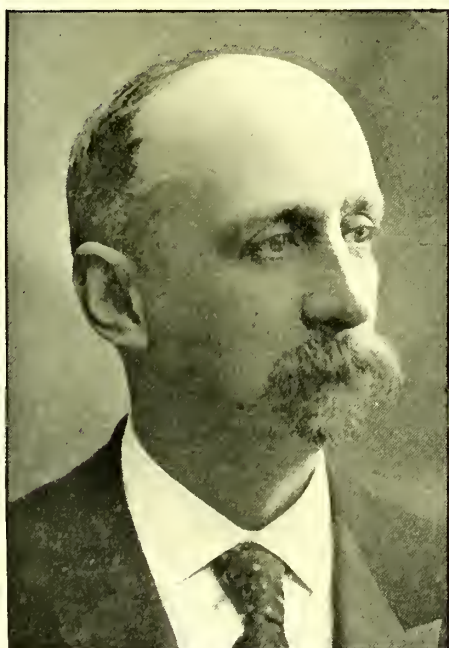
LEADING MEMBERS OF THE TRADE



ALDERMAN AMOS HINTON



SAMUEL SHIRLEY



ARTHUR J. GILES



A. G. GRANTHAM

the ceiling, and unless it has an external glazed window of at least 9 superficial feet in area, of which at least $4\frac{1}{2}$ superficial feet are made to open for ventilation.

The Act also makes special rules for the fencing of hoists, fly-wheels, steam-engines, mill-gearing, and dangerous parts of machinery.

We shall have more to say on the law of the shop. The above laws and regulations are mentioned here because compliance with them is the preliminary to carrying on business in any branch of trade specified.

Miscellaneous points connected with licenses are dealt with in the following excerpts from the "Notes and Queries" pages of *The Grocer* newspaper:—

**Licensing Notes
and Queries.**

I have two shops in same town. No. 1 shop is grocery only. No. 2 shop has a beer-dealer's licence, also a retail beer off-licence. These licences are in my name only. I am frequently at shop No. 2, but do not sleep on the premises. My son lives and sleeps there. Am I conforming to the Act, as I do not sleep at No. 2 shop?—If you have a beer-dealer's licence and an additional beer retail licence it is not necessary for you to live upon the licensed premises, but if you hold a beer off-licence it is a *sine quâ non*.

I hold wine, spirit, and off-beer licence (25s.) at one place, and reside elsewhere. I also hold off-beer (25s.) at P—— Street, which is worked by a manager, who resides there. I now seek to take another business with off-beer (25s.), but the owner says I cannot legally hold more than one such licence. Can you tell me the law?—You are only entitled to hold one off-licence, and must reside upon the premises for which the licence is held. You can, however, hold a beer-dealer's licence and an additional beer retail licence for as many places as the magistrates permit.

At our central shop we have a wine and spirit licence; at the branch we have not. Can I legally take an order for wines and spirits in the branch shop and forward it on to the central shop to be delivered direct to the customer?—You can forward orders on the understanding that they will be accepted or declined on the premises, but they must not be definitely accepted at the branch office. They should be invoiced from the licensed premises.

We have a branch shop having only a wholesale licence for beer, wines, and spirits, as we have not been successful in getting a retail licence. Can our assistants employed there take orders for beer in retail quantities either on their rounds for orders or in the shop? If so, can the orders so received be sent by messenger or telephone from this branch to the retail licensed premises here, our main stores?—Orders can be sent to licensed premises from anywhere, but it must be clearly demonstrated to the person giving the order at any place to any person except on licensed premises that the person receiving the orders is merely acting as a messenger and not as an actual receiver of the order. Thus an order may be sent by post, by a messenger, by telephone or telegraph, by anyone; but a person coming into an unlicensed shop and ordering there or giving orders to an agent must be informed that the sale cannot take place there and then, but that the order will be forwarded to the licensed premises to be executed there. It is well to have a printed form to be filled in at the unlicensed branch in the case you mention.

Is it legal to exhibit in a branch shop the following notice:—"Orders taken for acceptance at licensed premises for ales, stout, wines, and spirits"?—The notice is not well worded, but it might easily be worded so as to be perfectly legal.

A late employee has taken out a hawker's licence and solicits in country district for cotton goods. We hold a retail beer licence, and suggest giving him a commission to sell bottled beer for us—that is to say, to take orders one journey and deliver the next. We wish to know if that will be legal?—He must not take orders for beer, but he can forward orders, to be accepted or refused on the licensed premises. You must also be careful to carry out all the details as laid down in the cases of "*Pletts v. Beattie*" and "*Stephenson v. Rogers*".

We are grocers, &c., holding a full grocer's licence, and go out travelling in the country districts, one of our journeys crossing the border into another county. Our traveller, on going there this week, was informed by a magistrate that we required a magistrate's certificate to sell wines, spirits, &c., there in addition to the one we already hold. Kindly state if this is correct. Nothing is sold from the van, orders being taken one week and delivered the week following.—If the wines, &c., are sold from a licensed shop you are entitled to send them anywhere. You must be careful that your traveller merely takes the orders as a messenger to forward them to be accepted or refused upon the actual licensed premises, and that upon the licensed premises the goods are appropriated to the various customers.

I have a wholesale beer licence attached to a branch business only. I send an assistant out from my principal shop soliciting orders for groceries. Some of the customers want beer with their groceries. Is it legal for my assistant to take orders for beer on behalf of the branch shop at the same time, of course sending the orders to the branch for delivery of the beer from there?—There is no law to prevent your assistant also working for one of your branch shops, but he must be careful to take the orders to the licensed shop, and the sale must be completed on the licensed premises.

I am manager to a firm having several shops that hold spirit licences (bottle). I call on a customer who, after giving her order for groceries, asks to be supplied with a bottle of brandy. Not holding a licence at my branch, I send on the order for brandy to a branch holding licence to supply same from there as an entirely separate transaction, my branch having nothing to do with it further than sending on the order to them. Is this legal?—Yes.

Are you bound to put the strength of spirits on the bottle?—Yes, if below 25 under proof.

What is proof spirit?—Proof spirit is the legal unit of strength for the estimation of all spirit strengths, and consists of a mixture of 49.24 parts by weight of pure alcohol and 50.76 parts by weight of distilled water.

I hold a wine and spirit licence to sell same by the bottle and $4\frac{1}{2}$ -gallon casks of ale, &c. I also sell mineral waters and confectionery, *i.e.* sweets manufactured from sugar, &c. The Inland Revenue officer called and told me that I must not sell the two latter. Is he right?—Yes.

We hold wholesale beer licence. Can we take orders for legal quantity and deliver same in dozens or separate gallons, the whole being paid for before or after delivery.—The magistrates at Blackpool decided this to be illegal.

(1) Can a grocer with fully licensed house close his business premises at 8 p.m. or earlier if he choose to do so, or is he bound to keep open to supply drink (beer, &c.) until the time of closing of hotels in the same town, viz. 11 p.m.? (2) What

are the Acts of Parliament relating to the sale of intoxicants—beer, wines, and spirits?—(1) The premises can be closed to suit the convenience of the owner, but if it is found to interfere with the public convenience it may have a serious effect upon the licence. (2) These are too numerous to catalogue, and exceedingly intricate. A book which summarizes them is *Paterson's Licensing Acts*, published at 12s.

Is a holder of a wine and spirit licence debarred from obtaining a licence to retail methylated spirit in sealed bottles?—He is only debarred from selling methylated spirit in any form if he sells beer, wine, or spirits to be consumed on his premises.

Is it legal to sell draught ale over the counter on credit, and are accounts including items for beer so sold recoverable in the county court?—Yes, provided it is not consumed on the premises.

Presuming a man in an intoxicated condition enters our shop (licensed grocer's) and is supplied with, say, a bottle of whisky, are we liable for "supplying a drunken person"?—Yes.

Are we safe in selling a child a bottle of beer in a stoppered bottle with a paper capsule gummed on?—Yes, but it must be so fixed that it cannot become unstuck, as it does when delivered wet.

I have a wholesale wine, spirit, and beer dealer's licence. Should I require to take out a rectifier's licence if I commence making ginger cordials, peppermint cordials, and cider?—A compounder's licence of £10, 10s. is necessary in respect of cordials, but no licence is required for cider making. The compounder's licence may be held by a wholesale wine, spirit, and beer merchant.

3. THE OILMAN

The "oil and colourman", who once dealt chiefly in paints and the oils for mixing them, has in the course of trade evolution become a most indefinite type of tradesman. Of late years cheap petroleum oil has come so largely into use for lighting and heating, that the sale of this burning oil and the lamps and stoves in which it is consumed has become a very large business. But besides selling oil and sometimes lamps, the oilman of these days sells soap, tallow chandlery, firewood, pickles, sauces, tinned goods, jams, brushes, baskets, hardware, ironmongery, china, and not infrequently groceries of various kinds. Describing recently "an up-to-date oilman's business", a London retailer writes: "Probably no business is more varied than that of the London oilmen. It varies with localities, and includes trades which appear to be quite distinct. At one shop there is a preponderance of articles for the use of house painters and decorators. Another shop deals chiefly in burning oils, lamps,

A Varied
Trade.

and oil-stoves. A third one handles gums, varnishes, lacquers, polishes, and sundries suitable for furniture-dealers, metal-workers, &c. Others are more or less concerned with artists' colours, dyeing substances, &c. Then there is another kind, the most common of all, which aims at stocking a supply of some of the above articles, but which principally undertakes to supply all sorts of household necessities. Accordingly we find soaps, packed in bars or tablets or unpacked; canned, bottled, and potted articles of food; various goods generally known as groceries; brushes, mats, turnery, earthenware, ironmongery, and other sundries, composing the stock. If we may judge by the requests made at the counter, an oilman is usually supposed to keep everything that is not worth keeping by anybody else. The forms and types of oil-shops are almost as varied as the colours which they are popularly supposed to dispense. Years ago the painters and builders went to the oil-shop for their painting materials and accessories. To-day manufacturing and wholesale firms call upon any jobbing decorator, engineer, or any possible buyer; soap-makers, blue-manufacturers, and salt-merchants call upon laundries, butchers, bakers, fish-mongers, &c., and so capture the business which was formerly done by the retail oilman, with whom things would now go hard if he depended upon large orders. The result is that the oilman has found other openings, and he has become a universal provider of small wares of every conceivable kind. His brother the grocer helps him in the matter of proprietary soaps and many other articles, and he, on the other hand, has for a long time been sharing the grocer's business, so that the two businesses are very much mixed."

Upon the bill-heads of a fairly representative oilman, which are now before us, appear the names of ten departments, namely: Oils and colours, grocery sundries, tinned and potted foods, brooms and brushes, stains and varnishes, ironmongery, garden tools, china and glass, lamps and globes, mats and basketwork. (The London Company of Tallow Chandlers, it may be interesting to recall, exercised in bygone centuries a scrutiny over oil, soap, vinegar, butter, salt, gallipots, pack-thread, pans, brooms, mustard, and oatmeal!) We do not propose to deal with all of these branches of trade, but particulars relating to most of them that are associated with the grocery trade will be found in this work. To bring them together here in this special order would serve no

purpose, because, as has been said, shops vary and overlap in many different ways.

With regard to starting, and **choice of stock**, the Retailer above quoted proceeds to observe that: "Given a minimum capital of £200, a fair knowledge of the trade, energy, clear-headedness, and correct working methods, an oilman Starting as Oilman. should succeed almost anywhere. He cannot be a 'universal provider' with this capital, but, properly used, he can enlarge it little by little, until his store becomes an important factor in the local business. To succeed, a trader must pay attention to buying, paying, storing, arranging, selling, and various contributory details. From the comprehensive nature of the oilman's business it is evident that a varied stock is needed. Assortment, rather than quantity of a particular line, must therefore be the objective in buying. It is recommended, however, that he specializes his business in one well-defined direction. The direction must be governed by the circumstances of his locality and the position of his shop. The variety of his stock which is available for this purpose should render it easy to select an avenue for a special departure. Having decided upon his course, he will take one of the classes of goods above enumerated, or something else, and he will push it forward for all it is worth. He should especially see that his stock in this department is fully representative, uniform as to quality, moderate in price, and always obtainable at his shop. If these conditions always hold good, he will not need to cut prices. Moreover, if it is seen that he knows the wants of his customers, and can satisfactorily supply them, it will give him a reputation which must ultimately benefit the other departments of his business. It will also serve as an object-lesson to him, showing by experience how to work up other departments."

While such questions as buying, paying, &c., need not be discussed here with special reference to the oilman, something must be said respecting his shop arrangement and storage. The varied nature of the many small items which an oilman may keep should induce him to adopt a classification of articles which are not constantly selling. This will save time when serving a customer. For instance, say he keeps pastry brushes, steel skewers, and wooden butter-beaters or bats. They might possibly be classed as brushware, iron, and

**Oil-shop
Arrange-
ment.**

wooden goods. But they are all kitchen utensils, and can be kept in a drawer or box with other articles of that class, not mixed up and dirty, but carefully papered in small parcels. On the top of the box or drawer is a card or list of the entire contents. Small wares of various classes can be similarly treated. When making a window show of kitchen utensils, the small items kept in stock should be included. They will be fresh and clean, and will be a testimony to the passer-by of the inclusiveness and condition of the stock. If there has been no overbuying of other goods, money is available for many small things. The profits on out-of-the-way goods may have been small, but the ability to serve all customers will build up the business. A word of caution is needed here. Money must not be spent lavishly even on these small things, because they are slow of sale, and may absorb capital which is needed to buy saleable articles. It is necessary for all classes of goods sold to be represented in the shop display, and as an oil-shop is popularly supposed to be dirty there is all the greater need for attention to cleanliness and order. The point is to have, in the shop interior, plenty of goods neatly arranged and clean, and the floor sufficiently clear to admit customers without having their clothes soiled or the goods knocked over into confusion. In the windows avoid a higgledy-piggledy method of showing goods; let each class when displayed be as complete as possible. If the window is too large for your stock in one class of goods, divide it into several well-defined sections.

Next, as to **storage**. "I have seen", writes our Retailer, "a drawer containing loose mustard next to a drawer of ground pepper, the result being that the mustard had a peppery flavour. Another time I saw chloride of lime near tin-ware; brown and green painting colours in drawers side by side with drawers containing spices, arrow-root, or other eatables; pickles on high, hot shelves; soda and French nails or tacks in open boxes side by side; lamp-chimneys, divested of the straw packing, in boxes in the yard during wintry weather; in fact, everything dumped down without the slightest study of the nature of the goods or order in their arrangement. I have seen in a grocer's shop some 1s. 4½*d.* tins of cocoa, unpacked, and pushed under a back provision fixture, the papers wet, smelling horribly of decaying cheese, and unsaleable at the time. The careful

stock-keeper will study matters of this kind, and so prevent loss. Above all things, the oilman who keeps eatables must keep them clear of paraffin, both as to smell and contact." It may be mentioned here that for oil, as for syrup, convenient pumps may be had from the shop-fitters; oil tanks are also made from which, when the customer's can is hung upon them, an exact adjustable quantity of oil is run out without further attention being required.

Oil storage is a matter of special importance. Reference has been made in the foregoing chapter on LICENSES to the fact that Burning Oils do not come within the definition of "Petroleum" as laid down by the Petroleum Acts, 1871 and 1879; what is there called "petroleum" is the very inflammable article better called "petroleum spirit". Petroleum oil for burning does not, as a rule, "flash" at as low a temperature as 73° Fahr., consequently is not subject to the Petroleum Acts, and is not under the control of the local authority as regards its storage. A common method of storing such burning oil is to have a tank in the yard holding, say, 150 or 200 gallons. From this tank a pipe is carried through the wall and under the floor of the shop to a corner where an "engine" or pump—similar to a beer-engine—is fitted. The "engine" may be partitioned off, and fixed so that any drip may fall into the ground—that is to say, a part of the flooring is cut away to permit of this, in order to avoid saturation. Or a metal bucket or pan or sink may be used. The oil is drawn into a glass siphon (stamped by the local inspector as a measure) up to, say, half a gallon. This siphon and a funnel enable the oil to be drawn into the customer's can without soiling the hands or creating a disagreeable odour of petroleum in the shop.

Captain Thomson, H.M. Chief Inspector of Explosives, in a paper before the International Fire Prevention Congress in 1903, pointed out that it must not be supposed that because there is no legislation in regard to petroleum oil, precautions are deemed unnecessary. Many of the precautions which are necessary for spirit are equally desirable where only oil is kept, the difference of danger being only in the greater ease with which spirit is ignited, and the greater tendency which it has to form an explosive atmosphere. When a fire has once been started, it makes little difference whether oil or spirit is involved.

Petroleum should be kept in metal vessels wherever possible. He regarded this as imperative in the case of spirit, having had experience of the danger of leakage of vapour through wooden barrels. Such barrels are still strongly advocated by some persons, both for the conveyance and storage of petroleum, but in the case of spirit he found their arguments entirely unconvincing. One of the principal virtues of a wooden barrel when used for an aqueous liquid is that the liquid swells the wood, and by increasing the pressure between the staves diminishes the chance of leakage. This quality is lost with petroleum, which, though it permeates the wood, has no effect in swelling the staves. Consequently, to keep the petroleum from all leaking out, it is necessary to coat the interior of the barrel with glue. When this coating is fresh, the barrel may be fairly free from leakage; but when, owing to dry weather, the staves have shrunk, or when the barrel has been knocked about, the glue coating becomes defective, and more or less leakage inevitably occurs.

As to the place where petroleum is stored, it is very desirable, Captain Thomson said, that this should be outside the fire-risk of a dwelling-house—that is to say, in a building wholly detached or separated by a fire-proof wall. Probably the safest method is in an underground tank, separated from all buildings. Where, however, it is necessary to store petroleum inside a shop or dwelling-house, the best position is a well-ventilated cellar, with a tank from which the oil may be drawn by means of a pump for retail dealers. The worst place of all is under the main staircase. The metal tank in which the oil is stored should be hermetically closed with the exception of an air-hole, which should be covered with very fine copper wire-gauze. In the case of fire, the oil in such a tank might all burn away without seriously adding to the conflagration, or might even escape ignition altogether. Of course water must not be played into the tank, as this would have the effect of floating out the petroleum. In every place where petroleum is stored there should be a supply of sand and a shovel. This is useful, not only for absorbing any spilt petroleum, but also for extinguishing fire in its initial stage. The **most important precaution** is the exclusion of naked lights from the neighbourhood of the petroleum. If only oil is present, it is sufficient to guard against a light being taken into the immediate vicinity of the

vessel in which the petroleum is kept, but in the case of spirit an ignition might take place at some distance from the actual vessel if there has been any leakage, as the vapour is heavier than air, and has a tendency to flow or drift with light currents of air to a considerable distance before it is so far diluted as to become unflammable. For this reason a naked light should not be taken into any store or room where spirit is kept or used, and care should be taken that there is no fire or light in the vicinity of such store or room. In general, the store should only be entered during daylight, but if it is necessary to enter at night a safety lamp, such as is used in coal-mines, should be employed. If electric light is installed in any building in which petroleum spirit is stored or used, it should only be done under the advice of an expert thoroughly acquainted with the special risks to be guarded against. The lamps themselves should be enclosed in strong glass outer globes fitted on with an air-tight joint. The wires should be well insulated, and should preferably be contained in metal pipes connected to earth. All switches and fuses should be outside the building beyond the reach of vapour, unless they are of such special construction, or so enclosed in metal cases, that the vapour cannot possibly reach the interior. In general, no current-bearing part—that is, no metal part in connection with the source of supply—should be exposed. As in the case of explosives, no highly inflammable material should be kept near the petroleum. In this connection it may be well to mention the danger which may arise from empty petroleum barrels. It is commonly supposed that the fire-risk is at an end as soon as the barrel is empty, and such barrels are deposited anywhere regardless of possible ignition. The wood being saturated with petroleum, these barrels are often highly inflammable, and when they have contained spirit are generally full of vapour. Several accidents have occurred through mischievous boys putting lighted matches to the bung-holes of empty spirit barrels. It is also necessary to guard against petroleum, especially spirit, finding access to sewers. **Methylated Spirit** and **Turpentine** are usually kept at oil-shops in metal drums, and varnishes are kept in 1- or 2-gallon cans and in earthenware bottles. These latter are liable to break in case of fire, and the contents to become involved. Large stocks of **Matches** are generally kept at oilmen's shops,

Lighting an
Oil Store.

and these are usually packed on shelves in the shop. Several fires are traceable to the ignition of matches which have fallen on to the oil-saturated floor.

By Orders in Council dated 1897, **Carbide of Calcium** was brought within the meaning of the Petroleum Acts, and licenses

are required for its sale and use; but 5 lbs. of carbide

Carbide. may be kept without a license, if in hermetically-closed metal vessels containing not more than 1 lb. each. Every vessel of carbide of calcium sold or exposed for sale must bear in conspicuous characters the words "Carbide of Calcium, Dangerous if not kept Dry", and the following caution:—"The contents of this package are liable if brought into contact with moisture to give off a highly inflammable gas". Also, the vessel must bear: (a) In the case of a vessel kept, the name and address of the consignee or owner; (b) in the case of a vessel sent or conveyed, the name and address of the sender; (c) in the case of a vessel sold, the name and address of the vendor.

Local authorities in granting licenses (see **LICENSES** *ante*) for keeping **Petroleum Spirit** for sale usually stipulate that there must be used for such storing a fireproof isolated building, so constructed that the spirit cannot escape in case of leakage. It is somewhat of an anomaly that if the petroleum spirit is for own use it can be stored in quantities of 60 gallons, if in 2-gallon cans,

Petroleum Spirit without any license; while if kept for sale the license
and Benzoline. of the local authority is needed. **Benzoline** comes

in the same category as "Petroleum" (*i.e.* spirit) under the Acts. The Eastbourne local authority in a circular points out that the penalty for keeping benzoline in larger quantities than one pint without license is £20 a day and forfeiture; and adds, "Leaving a gas-tap turned on full without lighting the gas is not more dangerous than a vessel of benzoline with the stopper out when naked lights are near". In order to prevent illegal storage and ensure safety to the users of benzoline, it is recommended that retailers of benzoline do not supply customers (except licensed customers) with more than *one pint* in *one vessel*, and in every case to see that the corks and stoppers are perfectly sound, and the vessels securely stopped when delivered to the purchasers, to prevent the escape of the very inflammable vapour which is given off at ordinary temperatures. Persons who find it necessary to

take out a license to keep "Petroleum" should obtain from a stationer a copy of the Petroleum Acts.

The **Hawking of Petroleum** is controlled by the Petroleum (Hawkers) Act of 1888, which states that "Any person who is licensed in pursuance of the Petroleum Act, 1871, to Hawking Oil. keep petroleum to which that Act applies may, subject to the enactments for the time being in force with respect to hawkers and pedlars, hawk such petroleum by himself or his servants", and that with respect to the hawking of petroleum to which the Petroleum Act, 1871, applies, the following regulations shall be observed:—(1) The amount of petroleum conveyed at one time in any one carriage shall not exceed twenty gallons. (2) The petroleum shall be conveyed in a closed vessel so constructed as to be free from leakage. (3) The carriage in which the vessels containing the petroleum are conveyed shall be so ventilated as to prevent any evaporation from the petroleum mixing with the air in or about the carriage in such proportion as to produce or be liable to produce an explosive mixture. (4) Any fire or light, or any article of an explosive or highly inflammable nature, shall not be brought into or dangerously near to the carriage in which the vessels containing the petroleum are conveyed. (5) The carriage in which the vessels containing the petroleum are conveyed shall be so constructed or fitted that the petroleum cannot escape therefrom in the form of liquid, whether ignited or otherwise. (6) Proper care shall be taken to prevent any petroleum escaping into any part of a house or building, or of the curtilage thereof, or into a drain or sewer. (7) The petroleum shall be stored in some premises licensed for keeping of petroleum, and in accordance with the license for such premises, both every night and also when the petroleum is not in the course of being hawked. (8) All due precautions shall be taken for the prevention of accidents by fire or explosion, and for preventing unauthorized persons having access to the vessels containing the petroleum; and every person concerned in hawking the petroleum shall abstain from any act whatever which tends to cause fire or explosion, and is not reasonably necessary for the purpose of such hawking. The section goes on to forbid the hawking of petroleum along with inflammables, such as matches.

Lamps are articles of the oilman's stock which require his very

special attention. An important paper on the subject of lamps was contributed to the International Fire Congress of 1903, as embodying the joint opinions of Dr. Boverton Redwood, Points in Lamps. Adviser to the Home Office, and Captain Thomson, H.M. Chief Inspector of Explosives. The authors remarked that *stability* is the first requisite in a lamp for burning mineral oil, for a lamp top-heavy or liable to be overturned is obviously a source of danger. If the lamp, with chimney and shade in position, and if possible with the container filled with oil, but unlighted, is placed on a level surface and gently tilted, the extent to which it can be inclined without overbalancing can be easily determined, one hand being in readiness to catch it when it begins to fall over. As a rule, if the edge of the base can be lifted to a height which in relation to the diameter of the base is in the ratio of three to ten before overbalancing occurs, the lamp may be considered to have sufficient stability. If, therefore, the diameter of the base is five inches, it should be possible to raise one edge of the base one inch and a half from the table before the lamp overturns. A simpler but less trustworthy rule is that the height of the lamp to the top of the burner should not be more than two and a half times the breadth or diameter of the base. Some tall lamps which do not fulfil this requirement are nevertheless stable enough owing to the weight of the base. Lamps which have no support or base below the oil-container are usually sufficiently stable, but sometimes the container is rounded off or contracted so as to leave only a small surface on which the lamp actually stands, and in such cases the stability may be less than that of a tall lamp with a pedestal. Insufficient stability is a defect which can often be remedied by having a block of wood of suitable diameter firmly attached to the base of the lamp.

Scarcely less important than the stability of the lamp are the strength of the oil-container to withstand a fall, and the security of attachment of the container to the pedestal or base. The oil-container should be of such strength as to withstand a fall from a table on to a bare wooden floor without being broken or allowing the oil to escape. Much difference of opinion Glass Containers. has been exhibited as to relative merits of metallic and glass containers. Less heating of the oil occurs in a glass container, glass being a worse conductor of heat than metal.

Moreover, a clear glass container presents the advantage that one can see at a glance when it needs replenishing. On the other hand, a well-made metallic container is far stronger than a glass container, and in the opinion of the authors this important feature of superiority should cause the preference to be given to the container of metal, though no doubt the substantial glass reservoirs of some of the higher-priced lamps are of ample strength if used with care. Unsubstantial glass reservoirs are certainly a source of danger, a large number of accidents having occurred in the use of the so-called "egg-shell" lamps, with reservoirs of thin porcelain glass. Such lamps almost invariably break if they are dropped, and the containers are of insufficient strength to resist even a mild explosion. Small hand-lamps having glass containers with handles of the same material should not be purchased, for the handle is liable to be cracked and to break off while the lamp is being carried. The container should be broad and shallow, rather than narrow and deep, so as to minimize the alteration in the level of the oil during combustion, for the burner may become overheated if the wick is not able to raise an ample supply of oil by capillary attraction. It must not be supposed that proper principles of construction can be safely ignored in lamps of very small size, for the diminutive "gum-bottle" lamps which are sold for a penny have been responsible for many accidents.

Metal is by far the best material of which to make the pedestal, and if used in the form of a casting its weight adds to the stability of the lamp. The provision of a filling-hole, usually closed by a screw-plug, is unnecessary, and is open to the objection that it offers a temptation to refill the lamp without first extinguishing it. If a filling-hole is provided, the plug should have a well-fitting screw of not too fine a thread. Sometimes this plug is perforated to allow air to enter the container as the oil is consumed. It is doubtful whether this air-inlet is ever needed, for it is inconceivable that any oil-container should be so hermetically closed as to prevent the extremely slow ingress of air requisite to prevent the formation of a vacuum as the oil-level falls. If there is an air-inlet it should not be larger than a pin-hole, otherwise it will allow the oil to escape through it in the event of the lamp being overturned. It is still more important

that the hole should be extremely small to prevent the possibility of the vapour inside the reservoir being ignited by the flame of

the lamp. Another excellent precaution is to convey
Burners.

the oil from the container to the wick by a small tube, which thus minimizes the risk of the ignition of an accumulation of vapour. The attachment of the burner to the container should next receive attention. If the container is of metal the collar into which the burner is fitted should be soldered or brazed on; but if it is of glass the collar must be securely attached by means of cement, and if there is any appearance of this not having been properly done the lamp should be rejected. A good screw is preferred to a bayonet-joint for holding the burner in the collar; but in cheap lamps the screw is usually pressed out of thin metal, and this allows it to become cross-threaded and insecure in use. There should be at least three complete turns of the thread in the external and internal screws. Penny gum-bottle lamps with soldered tin tops should not be sold.

The **types of burner** most commonly met with are the flat wick, in its single and duplex forms, and the circular wick, or Argand. These forms are equally safe if well made. In selecting any burner, it is of the highest importance to see that there is no opening through which flame can pass to the interior of the oil-container, where it must always be assumed there may be an explosive mixture of vapour and air. It is doubtful whether an air-inlet is necessary; in any case it should not be larger than a pin-hole. Burners should admit of being readily taken to pieces for periodical cleaning, and it is specially necessary that the dome or cone of the single or duplex flat-wick burner should be removable, otherwise the space beneath it can only with difficulty be kept clear of charred wick, dead flies, &c. The various parts, however, should be so fitted as not to be liable to be accidentally shaken out of place. The metal of which the burner is made should be stout enough to resist somewhat rough handling without getting out of shape, but any thickness beyond this is undesirable, as thick metal is not so effectively cooled by the air currents.

The wick tube should be solid-drawn, brazed, or made
Wicks. with a double-folded joint, and should be securely and completely soldered or brazed in position in the burner.

The wick should be loosely woven of long-staple cotton. A

hard, tightly-woven wick of short-staple cotton, besides reducing the light-giving power, may cause heating of the burner, owing to such wick being deficient in capillary power, and thus failing to raise an adequate supply of oil. A thin, hard wick may also leave a channel for the passage of flame between it and the wick-tube. It is well to have the burner fitted with an extinguisher, so made that **no** part of it is liable to remain in such a position that it can become unduly heated when the lamp is relighted.

The Board of Education has issued the following circular:—

SUGGESTIONS FOR THE CARE AND USE OF PETROLEUM LAMPS

1. The wick should quite fill the wick-tube without having to be squeezed into it.
2. Before using the wick should be dried at the fire, and then immediately soaked with oil.
3. Wicks should be in lengths of not more than ten inches, and should always reach to the bottom of the oil-container.
4. It is well to change the wick after two months' use.
5. See that the chimney of the lamp fits properly, and is held sufficiently tightly so as not to fall off when the lamp is used.
6. When a new wick or chimney is required, it is always advisable to take the burner to the shop that it may be properly fitted.
7. The burner should be taken to pieces and thoroughly cleansed at least once a month, and all burnt pieces of wick, dead flies, dirt, &c., should be carefully removed.
8. Never refill the lamp when it is alight, or near a fire or other light.
9. After filling see that the burner is properly fixed on, and if there is a side filling-hole be careful to screw in the plug.
10. Before lighting remove the burnt crust of the wick.
11. Be careful not to spill oil in filling; if any is spilled on the lamp wipe it off.
12. Before lighting see that the slit in the cone of the burner is exactly over the wick-tube, so that flame will not touch the metal.
13. When first lit the wick should be partially turned down, and then gradually raised, but not so as to smoke. When the edge of the flame is orange-coloured the lamp is not burning properly, and the burner should be examined.
14. Do not continue to burn the oil until it is completely exhausted. It is best to keep the lamp well filled.
15. Lamps which have no extinguisher should be put out as follows:—The wick should be turned down until there is only a small flickering flame, care being taken not to turn down so far that the wick falls into the oil-container. The small flame may be extinguished by placing a piece of flat tin or card on the top of the chimney, or by blowing across the top of the chimney. Never blow down the chimney.
16. Never use a lamp which is broken or in any way out of order, or a chimney which is cracked. If any part comes loose, or is out of shape or defective, it should be taken to a lamp-shop to be repaired.
17. Always place the lamp in a secure place and on a level surface, and never

on a rickety table, or in any position where it could be easily upset. Hanging lamps should not be put on insecure nails in the wall.

18. Table lamps should not be carried about more than is necessary, and nothing else should be carried at the same time. Heavy lamps should be carried in both hands. The greater number of lamp accidents have been caused by dropping a lamp while it was being carried.

19. Lamps should not be turned down except for the purpose of putting them out. If turned low the oil is apt to be unduly heated.

20. Should a person's clothes become ignited, the flames should be smothered with a hearth-rug, blanket, woollen tablecloth, or wet towel.

21. NEVER POUR OIL ON A FIRE.

In the succeeding chapters we deal fully with the subject of the various oils, waxes, soap, candles, brushes, &c., handled by the oilman. However his stock may vary, he will of course

Hints. find it needful to keep such oils as olive, colza, cotton-seed, nut, mineral, lubricating, lard, neatsfoot, and sperm. These should all be properly labelled. In regard to olive-oil—which can be bought in bulk equal to the best proprietary labelled article in point of quality—it is well to demand a warranty of genuineness. Have a guarantee that all edible oils are vegetable oils, and not mixed with mineral oils. In some cases “sweet” oil is asked for by customers, who require it for eating or cooking purposes, and when this is so, a mineral oil must on no account be used. The retailer should also make it a rule to weigh his goods occasionally, as boxes of soap, boxes of candles, tins of meat, gallon jars of pickle, and many other goods not infrequently prove short of the quantity they purport to be. There should also be a frequent inspection of such canned goods as condensed milk, fish and meat pastes, meats, fruits, &c., which become “blown”, black, or otherwise unfit for human food. When discovered, such goods should be immediately withdrawn from sale.

The wholesale **transport and distribution of mineral oils** is now a very great and highly-organized business. Petroleum oil, or **Wholesale Oil Trade.** “kerosene”, which was once brought here wholly in barrels and cases, is now mainly imported in tank-steamers; lubricating oils and petroleum spirit in barrels. The chief ports receiving the oil are London, Liverpool, Bristol, Hull, Manchester, Cardiff, Sunderland, Dublin, and Belfast. Much the largest quantity is landed at London. At Thames Haven, Purfleet, and Beckton, tank-steamers discharge direct into storage-tanks. At Millwall, Bromley, and Bethnal Green on the Regent's

Canal, there are wharves at which the oil is landed by means of tank-barges. Storage depots exist at several places about the metropolis, the chief being at Battersea, Bow, Camberwell, Deptford, Fulham, Greenwich, and Hammersmith. Here the oil is stored in huge tanks, holding in some cases over a million gallons, and surrounded by a moat to confine the oil in case of bursting or other accident. At Liverpool the tank-steamers discharge through a pipe line into large tanks near the Hercules Docks; and similar installations exist on the Ship Canal at Manchester and at the other ports mentioned. From the large storage-installations kerosene is chiefly conveyed in bulk by means of tank-trucks and barges to small tank-depots, which are maintained at many railway-stations and waterside places to facilitate the distribution of the oil carried by these trucks and barges. Thence the oil is distributed to retailers, chiefly by means of horsed tank-wagons. Petroleum spirit is stored in barrels at Thames Haven, and also at Liverpool and Bristol; gas-oil is chiefly delivered direct from the steamer to the gas-works consuming it.

Petroleum oil is reckoned by the London wholesale trade as weighing in the case of American, 8 lbs. per gallon; Russian oil, $8\frac{1}{4}$ lbs.; and Roumanian, $8\frac{1}{8}$ lbs. per gallon. A barrel of Petroleum oil contains about 40 gallons, and weighs ^{Wholesale} _{Weights.} about $3\frac{1}{2}$ cwt. gross, 70 lbs. tare. Six barrels are reckoned as equal to 1 ton; 9 poods in Russian measure go to a single barrel, and a pood weighs 36 lbs. In making rough calculations one million (1,000,000) gallons are counted as similar in quantity to 25,000 (twenty-five thousand) barrels. A case of Petroleum weighs about 81 lbs. gross, 64 lbs. net, and contains 2 tins of 4 gallons each. In American petroleum oil a cwt. contains 14 gallons; 20 cwt. 280 gallons, and so on. Petroleum Spirit, Benzoline, or Naphtha are disposed of per gallon of 7 lbs. Lubricating oils are sold ex-warehouse at delivery weights, wharf tares. Coal or Shale oil is sold ex-wharf by the imperial gallon fixed by specific gravity, delivery weights, wharf tares. Turpentine is sold at per cwt., delivery weights and tares; the usual rule is to reckon 13 gallons to the cwt. Tallow is sold at the landing weights; Colonial at average tares, South American and Russian at fixed tares. The average weights of Tallow are:—Australasian, casks, from 7 to

12 cwts.; New Zealand, casks, from 7 to 10 cwts.; South American, pipes, (about) 15 cwts., half pipes, from 7 to 8 cwts., hhds. from 5 to 6 cwts.; North American, casks, from 8 to 10 cwts., barrels, from 3 to 4 cwts. Stearine is sold ex-warehouse, by sample, per ton, taken at landing-account weights and tares. Linseed, Rape, and Cotton-seed oils are sold per ton, real weights and tares. Olive oils are sold ex-warehouse, at per ton of 252 gallons, taken and received at delivery gauges. English-pressed or Copra oil is sold by the ton, real weights and tares; Cochin, Ceylon, Mauritius, and East India sorts ex-warehouse per ton at landing-account weights and tares. English Lard oil per ton, real weights and tares. Fish oils per ton of 252 gallons. Neatsfoot oil, ex-warehouse, per gallon of 9 lbs. With regard to packages, these are usually given in. Market prices quoted for cotton oil, linseed oil, and turpentine in barrels include the casks. Hull market quotations for linseed oil and cotton oil, however, do not include barrels, whereas in Liverpool and London barrels and pipes are included. A barrel of linseed or cotton oil contains from 40 to 42 gallons; a pipe may vary from 10 to 15 cwts., say 120 to 180 gallons. Casks of white-lead are usually 5 cwts. each. A cask may, however, be of any capacity; but the term "barrel" is restricted in meaning, and must contain the quantity stated. Resin and grease casks are free. Tins for varnishes are extra, but barrels free. When dry colours are supplied in casks the latter is generally included free, but the manufacturers' custom is not universal. Where the packages are original it is not usual to charge for them.

4. OILS

The term "oil" has a very wide meaning, being employed to designate a large variety of liquid substances, both natural and artificial, which have little in common except the property of burning, and, usually, of floating upon water, and being insoluble in this medium. In addition to the ordinary use of the word, a few expressions such as "oil of vitriol" (sulphuric acid) are met with; these are survivals of alchemistic times, and do not refer to oils as now commonly understood.

The oils proper are derived from animal, vegetable, and mineral sources. For the most part they already exist as such in the tissues, seeds, and strata of these three sources respectively, and have only to be extracted in some way so as to free them from the surrounding material. In other words, the oils in these cases have already been manufactured by nature: man's part is to separate them from other substances, not to make them. This separation is effected chiefly by simple mechanical processes—pumping in the case of mineral oils (kerosene, &c.), and pressure in the case of seed-oils (rape, colza, linseed, &c.)—but also to some extent by rather more complicated operations, such as extraction with solvents, and by distillation. On the other hand, a small number of oils are more or less artificial in the sense that they do not already pre-exist in the materials from which they are obtained, but are formed by a process of manufacture. Such are, for example, the “creosote oils” produced during the rectification of coal-tar; “fusel oils”, a product of fermentation; and artificial “oil of bitter almonds”, a chemical product.

Oils are classified in several ways, depending upon their origin, properties, and uses. Thus for some purposes they are conveniently divided into animal, vegetable, and mineral oils; for others, into “fixed” and “volatile” oils; for yet others, into “drying” and “non-drying” oils; whilst as regards their uses distinctions arise into lubricating, burning, edible, paint, and soap oils; and so on. “**Fixed**” oils are such as do not evaporate; a drop placed on a piece of paper, for instance, leaves a permanent grease-spot behind. Most of the ordinary oils are fixed oils—*e.g.* cod, seal, olive, palm, ground-nut, linseed, rape-seed, and so on. “**Volatile**” oils, on the contrary, will evaporate completely at the ordinary temperature. To this class belong most of the “**Essential**” oils used for flavouring and in perfumery. “**Drying**” oils are those which, when exposed to the air in thin layers, absorb oxygen from the atmosphere and readily dry to a tough skin. Boiled linseed oil is the typical drying-oil. The “**non-drying**” oils under the above conditions remain moist, either permanently, or else for a long time; and in any case they thicken and harden only very gradually. Olive oil is the typical non-drier. Between the extremes of these two classes there is really an intermediate group of “**slow-drying**” oils; but in practice these are

Sources of
Various Oils.

Classification.

generally referred to as “non-drying”, to distinguish them from the members of the first group.

The chief oils of the two divisions are as follows:—

Drying oils.	Non-drying oils.	
Linseed.	Olive.	Rape-seed.
Hemp-seed.	Almond.	Colza.
Poppy-seed.	Peach and Apricot.	Ravison.
Niger-seed.	Ground-nut.	Cotton-seed.
Walnut.	Lard oil.	Maize.
Chinese wood.	Neatsfoot.	Sesamé.
Boiled oil.	Tallow oil.	Sunflower.
Some whale oils.	Sperm.	Seal.
	Mineral oils.	Most whale oils.

The last column includes the oils which have slight drying powers, but not, as a rule, enough to be practically useful without some kind of special treatment. For present purposes it will be most convenient to divide the various fixed oils into the three natural groups — **Animal**, **Vegetable**, and **Mineral**, leaving the volatile or essential oils to be dealt with as a separate class.

GROUP I.—ANIMAL OILS

These are divided into: (a) *Oils obtained from fish and marine mammals*, namely, the **Seal Oils**, **Liver Oils**, **Whale Oils**, and **Fish Oils**. (b) *Oils obtained from terrestrial animals*, e.g. **Lard Oil**, **Tallow Oil**; **Neatsfoot**, **Horsefoot**, and **Bone Oils**. In trade usage the four classes of oils in (a) are often referred to collectively as the “**fish oils**”. The term is convenient; but of course the whales, seals, walruses, and porpoises which supply the whale and seal oils are not fish at all.

Seal Oils are obtained from the blubber of the seal, walrus, and allied finned mammals in the northern and southern seas. Various species of the seal tribe (*Phoca*) are caught for the skins and oil, e.g. those known as sea-lions, sea-cows, sea-calves, and sea-dogs. The blubber is carefully cut away and packed in a large wooden structure standing over a wooden receiver. After a time the pressure of the mass forces out the oil, which exudes through interstices in the upper vessel and is caught in the lower. The first runnings give the best oil, which is pale in colour and practically odourless: this forms about one-sixth of the whole, and is collected separately; it is known as

“light train oil”. As the blubber putrefies, the oil darkens in colour, eventually becoming dark-brown, and acquiring at the same time a very unpleasant odour. Several weeks are required for all the oil to run out, and the various grades of oil given during this period are run off at intervals. Finally the residual mass of putrid blubber is boiled to extract the remaining oil—an inferior kind—which is skimmed off the surface of the water. Seal oil has generally a very disagreeable odour, which can, however, be greatly improved by exposing the oil to air and light. In colour it varies from nearly water-white to brown, the commercial varieties being classed as “White”, “Pale”, “Tinged”, “Straw”, “Yellow”, and “Brown”, and the price decreasing correspondingly. The oil is used for lubricating purposes, and for burning in safety-lamps; also to some extent for adulterating cod-liver oil and for making soft soap—the latter, in this case, generally betraying its origin by its unpleasant smell. Greenland, Newfoundland, Sweden, Northern Russia, and the Caspian region, as well as the South Sea fisheries, all produce notable quantities of seal oil. The chief commercial varieties included under this term are **Walrus Oil**; **Sea-dog Oil**, pale and dark grades; **Archangel Oil** and **Sea-calf Oil**, pale-yellow to brown; **Greenland Oil**, clear pale, clear brown, and boiled; **Newfoundland Oil**; **Caspian Oil**; and **South Sea Oil**, pale-yellow to brown. **Three-Crown** seal oil, whether Greenland or Swedish, is said to be always a mixture of oils; in the first case chiefly the thick “foots” of seal oil thinned down with shark oil and a little whale oil; in the second a mixture of seal with ordinary fish oils. Occasionally vegetable oils are also used as adulterants.

In the class of **Liver Oils**, cod oil, or cod-liver oil, is, strictly speaking, the oil yielded by the liver of the cod (*Gadus morrhua*); but in practice it is obtained also from allied species, including ling, hake, and haddock; whilst other liver oils are prepared from the coal-fish, shark, sea-pike, and ray. The liver oils are obtained by three chief methods—hot-pressing, steaming, and putrefaction. The first process is mainly used by the Scotch oil-makers; in this the cleaned livers are cut up, heated, pulped, strained hot through cloth bags, and the residue pressed to force out the remaining oil, which is afterwards clarified. The steaming method is used for the preparation of Bergen,

Liver Oils.

Labrador, and Newfoundland oils. In this process the cleaned, finely-divided livers are subjected to the action of steam under pressure in a closed vessel, whereby, when proper precautions as to cleanliness are taken, mild, limpid, and only slightly acid oils are obtained, very suitable for medicinal use. By the putrefaction process three qualities of oil are obtained—"clear pale", "clear brown", and "brown"; these are produced by placing the cleaned livers in casks and exposing them to the sun. After a time, through the softening and contraction of the tissues, the best or "pale" oil exudes, and is drawn off through a tap in the upper part of the cask. Then the liver is weighted with stones, and, after further putrefaction, the "clear brown" oil is run off from a tap at the bottom of the barrel. Finally the "brown" oil is obtained by boiling the residual mass with water, and skimming off the oil. **Cod Oil** is the principal liver oil. "Pale" or "Clear pale" cod-liver oil is only used in medicine. It is

Cod-liver Oil. of light golden-yellow colour, with a characteristic, not disagreeable smell, and a flavour which is fishy but not bitter. In the Pharmacopœia it is described as "pale-yellow, with a slight fishy odour, and a bland, fishy taste". It has a slightly acid reaction. "Light-brown" (or "clear brown") oil is not of so good a quality as the "pale", but is also used for medicinal purposes. It is of chestnut-brown colour, with more odour, taste strong and rather bitter, and irritating to the throat. "Brown" or "Dark-brown" cod oil has a peculiar, objectionable fishy odour, a bitter taste, and is highly irritating to the throat. It is largely used for leather-dressing. **Shark-liver oil** is of pale-yellow colour, and of peculiar odour. It is obtained chiefly from the liver of the basking shark or sun-fish (*Squalus maximus*), caught mainly off the coast of Norway; and was formerly much used for leather-dressing instead of cod oil, but is in much less demand at the present time. It is usually said to be a very light oil, with specific gravity of only about 0.875, as compared with the 0.925 of cod oil; but there is considerable doubt as to whether the very light specimens were genuine shark oil. "**Japanese Fish**" and "**African Fish**" oils are liver oils very similar to shark oil. **Coal-fish oil** corresponds generally in flavour and odour to cod oil; **Ray-liver oil** is of similar character, but is not so unpleasant in smell and taste as the ordinary (brown) cod-liver oil.

Whale Oils are also known as “train” or “blubber” oils. They are obtained from the blubber of marine mammals, including the Greenland whale, fin-back, sperm whale, bottle-nose whale, manatee, walrus, dolphin, and porpoise. Whale Oils.

The blubber, which is about two feet thick on the body of the large whales, and of which a single animal will yield from 10 to 20 tons, is first cut into strips and then into small pieces by chopping machines. These pieces are sometimes at once melted down on board the vessel, the oil being strained and run into casks; in other cases the cut-up blubber is packed into barrels and stowed away in the ship's hold. Here it eventually putrefies; the tissues become softened, and a portion of the oil oozes out; this oil is collected, and on arrival in port is purified by being heated and drawn off from the deposited sediment. The blubber remaining in the casks is brought ashore and melted down in large pans, either by steam or over direct fire. A further quantity of oil—which is, however, inferior in quality—can be obtained by submitting the fleshy and bony parts of the carcase to the action of steam at high pressure: the oil floats on the surface of the condensed water, and is drawn off. Smaller animals, such as porpoises, are cut up bodily, and steamed to melt out the oil. After being clarified by settling, the oils thus obtained are known as “**unpressed whale oils**”. They range in colour from pale to brown, and are graded accordingly. Various commercial qualities are obtained by further treatment, Norway being the principal exporter of these. On cooling the oils down to about freezing-point, solid so-called “stearine” and some spermaceti are deposited. The liquid is pressed out from this solid matter, and is then known as “**pressed whale oil**”, whilst the residual cake is termed “train tallow” or “whale fat”. **Whale Oil** is ordinarily a brown or brownish-yellow liquid, having an offensive fishy smell and taste, although, by suitable treatment, these peculiarities may be much reduced. Some of the chief commercial varieties are: **Greenland Whale Oil**, which, when carefully prepared, is honey-yellow in colour, with fishy smell and tarry taste; **Fin-back** or **Rorqual** whale oil, colourless to brown; **Narwhal Oil**, very pale in colour; and **Bahia Oil**, which has strongly-marked drying properties. **Porpoise Oil** is one of the whale-oil group, and strongly resembles ordinary whale oil. It is derived from the black por-

poise, caught off the coast of Denmark, in the Mediterranean, and in the Black Sea, and also largely from the white whale ("White Fish Oil"), caught in the White Sea, in the St. Lawrence, and in various parts of the Canadian coast. The oil has marked drying tendencies, and is pale-yellow to brown in colour. **Dolphin Oil** is pale-yellow, with strong odour. **Menhaden Oil** is allied to the whale oils; it is of brownish colour, with fishy odour, and dries quite readily. The true **Sperm Oil** is obtained from the cranial cavities ("**Head Oil**") and from the blubber ("**Body Oil**") of the cachalot or sperm whale (*Physeter macrocephalus*), and is the most valuable of all the marine oils. Analogous products are yielded by several others of the toothed whales allied to the sperm; thus the oil from the bottle-nose whale is known commercially as "Arctic Sperm". On account of its having little or no tendency to turn rancid, sperm oil is highly valued for lubrication, and is preferred to any other oil for light machinery, such as the spindles of cotton-mills. It is also used for tempering steel tools with. Sperm oil is a rather thin, yellow oil, and the best kinds have very little odour; but the inferior qualities possess a distinctly fishy and unpleasant smell and taste. This oil, with that from the bottle-nose and allied toothed cetaceans, is distinguished from that of all the other whales by containing in solution a quantity of **spermaceti**, which wax is readily deposited from the oil when the latter is cooled down in ice-water. By reason of its high price sperm oil is very liable to be adulterated with cheaper products, *e.g.* shark-liver oil. But its well-marked chemical and physical properties render the detection of the adulterants comparatively easy, except in the case of the bottle-nose and allied oils. **Arctic Sperm** or **Bottle-nose Oil** is closely similar to sperm oil, but contains less spermaceti. In commerce the two are distinguished by their taste; the chemical differences between them are very slight, and the oil is often used as a substitute for sperm oil. It is obtained from the blubber, &c., of the Doegling or Bottle-nosed whale (*Hyperödon rostratus*), and is of straw-yellow colour when refined. The use of bottle-nose oil has lowered the high prices which sperm used to command. When well refined it is little, if at all, inferior to sperm as a lubricant. Both are much used for spindles and looms.

Fish Oils (*i.e.* Herring, Sprat, &c., oils) are obtained from the

waste portions of these and of larger fish. The heads and entrails obtained in the canning of sardines, herrings, sprats, pilchards, sardellas, smelt, salmon, &c., or the whole fish when ^{Various} spoiled and useless for packing, or unsaleable fish from ^{Fish Oils.} excessive catches, are either pulped up and then pressed to force out the oil, or else are boiled in water and the oil skimmed off and clarified. The residue is used as a fertilizer. These oils vary in colour from pale-yellow to brown, and have a characteristic fishy odour and flavour. They include **Herring Oil**, with **Swedish**, **Russian**, and **Astrakhan fish oils**; **Sprat Oil**; **Sardine Oil**, with **Italian** and **Mediterranean fish oils**; **Pilchard** and **Spanish fish oils**; **Sardella Oils**, and **Salmon Oil**. **Menhaden Oil** is sometimes included with this group, though more closely allied to the whale and liver oils.

Of the various fish and marine oils, although several are used as lubricants, yet **Sperm** and **Arctic sperm** alone are really suitable for lubricating machinery. **Seal**, **whale**, **cod**, &c., are liable to become gummy. **Illumination**, **soap-making**, **saw-tempering**, and **leather-dressing** are the principal uses to which these latter oils are put.

We come next to our class (*b*), **Oils obtained from land animals**. This group includes those natural and manufactured oils, fluid at ordinary temperatures, which are yielded by terrestrial animals. They do not dry to any appreciable extent when exposed to the air. **Lard Oil**, which is prepared largely in America and ^{Lard Oil.} to some extent in this country, is obtained by cooling lard down to 0° C. and then pressing it, enclosed in bags, with a hydraulic press. Fluid oil is forced out, leaving a residual white cake of "lard stearine", which is used for candle-making and for the preparation of oleo-margarine. The oil is a light-yellow, rather thin liquid, extensively used as a lubricant, and also for wool-dressing and as an edible oil. It is often employed in lighthouse and signal lamps, and to some extent for adulterating olive oil. It has itself been found to be adulterated with a highly-refined ground-nut oil and with rape oil. The latter may be detected by heating the sample to about 200° C., and then letting it cool to about 30° C. This treatment deodorizes lard ^{Oleine.} oil, but enhances the peculiar smell of rape oil. **Tallow Oil** or "**Oleine**" is obtained from beef, mutton, and other tallows:—
(1) By melting the tallow in vats, stirring in when nearly cold

about one-tenth of its volume of petroleum spirit, letting the mixture cool in moulds, and then wrapping the cakes so obtained in cloths and pressing them in a hydraulic press. The oleine, dissolved in the petroleum, is forced out, and then the solvent is distilled off. The solid press-cake is commercial "stearine" or pressed tallow: it is used for candle and soap making. (2) A simpler but less effective method, and one often used, is to press the tallow direct, without previous mixture with petroleum spirit. Tallow oil is, as a rule, liquid at ordinary temperatures, of viscid consistency, much resembling lard oil. It is mostly used in admixture with mineral oils as a lubricant, and also in soap-making. **Neatsfoot Oil** is, strictly, the oil obtained from the feet of oxen. Commercial neatsfoot oils, however, consist mostly of a mixture of sheep's-foot oil and horsefoot oil with the true neatsfoot, and often pig's-foot oil is added as well. The feet are soaked in cold water for a time, then cleaned, divided, and the sinews removed, after which the feet are boiled in water for a considerable time. The fat is then skimmed off the surface and allowed to clarify by settling, when it is decanted from the sediment and packed for sale. Neatsfoot is a pale-yellow, nearly odourless oil, of bland taste. It does not readily turn rancid, and remains liquid at freezing temperature; hence it is valued as a lubricating oil for clocks and machinery exposed to low temperatures. It is also used in leather-dressing. On account of its high price neatsfoot oil is largely adulterated, even if horsefoot and trotter oils are left out of question. Cotton-seed, rape, poppy, mineral, and fish oils are employed for its sophistication. **Horsefoot Oil** and **Trotter Oil** (from sheep's or pigs' trotters) are prepared in the same way as neatsfoot oil, and are, as a rule, mixed with it. The three are so much alike that it is practically impossible to detect moderate admixtures with any certainty.

Bone Oil. **Bone Oil** is obtained from bone-fat (itself extracted from crushed bones by boiling or steaming) by cooling the fat, or its solution in benzine, down to within a few degrees of freezing-point: the denser constituents solidify and separate out, and the liquid oil is then poured off. When benzine is used, it is, of course, distilled away from the solution, after the latter has been decanted from the solid deposit. Bone oil is yellowish to dark-brown in colour, and often contains a notable quantity of calcium

phosphate derived from the bones. It is chiefly used in soap-making.

GROUP II.—VEGETABLE OILS

Of these a very large number are known, but many are of no commercial importance. From the trade point of view the chief are **Olive, Cocoa-nut, Palm, Palm-nut or Copra, Ground-nut, Linseed, Rape-seed, Ravison, Maize, Cotton-seed, Castor, Chinese Wood, Sesamé, and Sunflower Oils**; also **Blown Oils** and **Boiled Oils**, and the group of **Eating Oils**, which includes several of the foregoing. The above will be dealt with in detail; but it will be convenient to first give a short description of the general manufacturing process, which is essentially the same for the majority of the oils in this division, and also an abridged classification showing the groups in which allied oils are usually placed.

Non-drying Oils.—Olive-oil group:—Olive and Olive-kernel; Ground-nut (Earth-nut, Pea-nut, or Arachis); Almond; Plum, Peach-, Apricot-, and Cherry-kernel; Tea-seed; Pistachio; and Ben Oils.

Semi-drying Oils.—(a) Rape-oil group:—Rape, Colza, and Ravison; Black-, White-, and Hedge-mustard; Cress; Cabbage- and Radish-seed; and Jambo Oils.

(b) Cotton-seed Oil-group:—Cotton-seed; Sesamé (Gingili, Teel); Maize; Brazil-, and Beech-nut; Sunflower, and Camelina Oils.

(c) Castor-oil group:—Castor, Croton, Curcas, and Grape-seed Oils.

Drying Oils.—Linseed, Hemp-seed, Poppy-seed, Walnut (= Nut Oil); Niger-seed, Chinese (or Japanese) Wood; Weld-seed, and Fir-seed Oils. **Boiled Oil.**

Solid or Semi-solid Vegetable Fats.—Palm Oil, Palm-nut Kernel Oil, Cocoa-nut Oil, Cacao-butter, Laurel, Macassar, Dika, and Bassia Oils; Nutmeg-butter, Cotton-seed Stearin, and Vegetable Tallow. Goa-butter, Mahwah-butter, Malabar Tallow, &c.

These include the chief vegetable oils and fats (exclusive of the essential oils); but they are far from exhausting the list.

From the various oil-seeds, such as linseed, rape, sesamé, &c., and also from olives, the oil can be obtained by more or less powerful pressure, which may be applied either to the cold or to the warmed material. The latter method gives the better yield, though in any case a certain amount of oil is always left in the seed. Those oils which are obtained by cold pressing (“cold drawn” oils) are of the finest quality and of the best flavour, and are also of better colour than

Manufacture of
Vegetable Oils.

where heat has been applied. This will be readily understood, for mere pressure simply forces out a certain quantity of free-running oil; whereas, by heating, other substances become softened or melted, and are pressed out with the purer oil. A good example is poppy oil, which when cold-pressed has an agreeable sweet flavour and is suitable for salad oil and general culinary purposes; whereas the hot-pressed kind has an unpleasant, bitter flavour, and is unfit for edible use.

Consequently, it is a general principle that vegetable oils intended for food purposes should be cold-pressed. The warm process is used for the extraction of oils required for technical applications, which, of course, constitute by far the greater quantity. A better yield is given, and in fact practically all the oil can be obtained from the seed by extraction with a solvent such as carbon disulphide, benzol, or petroleum ether, instead of using pressure. In this method the finely-ground raw material is treated with the solvent, which dissolves the oil out almost completely. The solution is then run off, and the solvent distilled away for future use, leaving the oil behind. Forms of extraction-apparatus are used in which the operations are largely automatic, and the method has been applied to a rather considerable extent on the Continent. But the somewhat greater yield is just about counterbalanced by the fact that the residual meal, being less rich in fat, has lower value as cattle-food than the oil-cake left by the pressure method. A combination of the two methods, pressure and extraction with solvents, is extensively used in France and Russia, where large quantities of arachis, hemp, linseed, sesamé, and sunflower oils are produced by this mixed process. In this modification, which is especially used for oils to be employed in connection with foodstuffs, the crushed seeds are first cold-pressed, and the residual cakes are then ground up again and extracted with benzine.

In the **pressure process** the *modus operandi* is as follows:—The seeds are first cleaned, sifted, and winnowed to free them from sand, stems, leaves, &c., and as far as practicable are freed from foreign seeds. They are next ground to a meal or crushed to a soft mass, the larger kinds such as palm-kernels or cocoanuts being first “disintegrated” or broken into small pieces, and seeds such as castor-oil beans, with leathery coatings, being

previously decorticated. The meal thus obtained, either warmed or not, as required, is packed in a closely-woven cotton cloth, which is itself enclosed in a strong horsehair wrapping to prevent breakage while in the press, and then submitted to pressure in a "wedge" press or in a hydraulic press. For hot pressing, the troughs containing the packages of meal are kept warm by steam. The expressed oil is led off by suitable channels as it exudes.

Obtained by any of the foregoing processes, but more particularly by the pressure methods, the oil is a more or less "*crude oil*", and may be either sold as such or sub-
 mitted to a refining process. The refining consists Refining and Bleaching.
 usually in agitating the oil with certain chemicals, of which the chief are sulphuric acid, dilute lye of caustic soda, and a mixture of this last with brine. A current of air is also sometimes blown through the liquid, and the latter may be heated with steam during the operation. The soda neutralizes the acidity of the crude oil and precipitates mucilaginous matters. After the mixture has been well shaken, the purified oil is run off, and clarified by settling or by filtration. In addition to the chemicals mentioned above, lime, lead oxide, zinc oxide, ammonia, and tannin are also employed for oil-refining. For many purposes the oils must be bleached, as their colour interferes with the use to which they are to be put. This bleaching is usually effected by treatment with certain bleaching chemicals, of which chlorine, sulphurous acid, hydrogen peroxide, bichromate, and permanganate of potash are the principal. The oil is well stirred up with a solution of the chemical chosen, and then allowed to clarify by settling. Marseilles, Hamburg, Hull, London, and Liverpool are well-known centres for oil-manufacture and refining.

For **Olive Oil** the olives used are the fruit of the thornless olive-tree, *Olea europæa sativa*, grown largely in the Mediterranean countries, and especially in Spain, Southern Olive Oil Manufacture.
 France, Italy, Greece, and on the coast of Morocco. It is also cultivated or grows wild in California, Mexico, and Peru. The Spanish variety gives the best yield of oil, though not the best quality. The ripe fruit is nearly black in colour and about $1\frac{1}{4}$ inch long. The oil is contained in the fleshy portion, but the kernels are also oily, and yield an inferior quality called "olive-kernel" oil. For good edible oils the fruit is allowed to

get fully ripe, and gathered in December; the unripe fruit olives often give a somewhat bitter oil, though notwithstanding this they are frequently used. To obtain the oil, the fruit, without its kernels, is pulped and pressed in the manner already described. The first pressing gives the quality called **Virgin Oil**; and this constitutes the highest grade of salad oil. The pulp resulting from the first operation is put under much higher pressure to yield the second-pressing oil, which, as a rule, is mixed with the virgin oil. The pulp is now treated with hot water, and pressed again, when a third-grade oil is produced. This is used for the table, for lubricating fine machinery, and for burning. The pulp still contains oily matter which is extracted with bisulphide of carbon, and used in making Castile soap and in dyeing. The oil from the several pressings is run into tanks with water, and is allowed to stand until the pulp and gummy matters settle. The oil is carefully drawn off, filtered, and stored in a cool dark place until ready for bottling, as olive oil becomes rancid very quickly if exposed to light and heat. Of the virgin oil grade, **Provence Oil** and **Aix Oil**, "Bouches du Rhone", are perhaps the finest kinds; they are made from hand-picked fruit, and under various names are used as best edible oils. Next in quality rank the oils sold in this country as "**Finest Tuscan Cream**", also, with somewhat inferior kinds, used as salad oils. In the United States **Californian** oil is largely sold, and is usually of high quality, the best grades of Californian, French, and Italian fetching the same retail prices. **Florence** and **Lucca** are the most esteemed Italian varieties; others are the **Tuscan**, **Gallipoli**, **Calabrian**, and **Sicilian**. **Spanish** and **Mogador** oils are less valued. Genoa, Leghorn, Marseilles, the Spanish ports, and Mogador are the chief places of shipment. The oil is imported into this country either in bulk or in wickered flasks, and the various qualities are usually classed as cream, extra sublime, sublime, superfine, fine, good, and ordinary. The French classify the comestible olive oils into the two general classes of virgin (first pressure), and ordinary (second pressure), and these again as *Virgin*: extra, superfine, fine, courante; *Ordinary*: mi-fine, ordinaire, and mangeable.

Olive oil ranges in colour from nearly colourless to golden-yellow, and some kinds are always greenish from the presence

OIL PLANTS

The plate shows five species of oil-yielding plants, namely, the common flax (*Linum usitatissimum*), with pretty blue flowers; the cotton plant (*Gossypium herbaceum*), with larger yellow flowers; the olive (*Olea europæa*), with small whitish flowers; the castor-oil plant (*Ricinus communis*), with large, beautiful leaves and spikes or racemes of pinkish flowers; and the lavender plant (*Lavandula vera*), with whorls of labiate flowers of the tint usually named from the plant. The oils are expressed from the seeds of the flax (*linseed-oil*), cotton, and castor-oil plants; olive-oil is obtained from the pulp of the fruit; and oil of lavender is distilled from the flowers. The cotton plant is of greater importance as the source of cotton, one of the great textile raw materials, and flax yields another important fibre which is manufactured into linen. The castor-oil plant is well known as an ornamental foliage plant. Details of these and many other oils are given in the accompanying text.

OIL PLANTS



1. Flax.

2. Cotton Plant.

3. Olive.

4. Castor-Oil Plant.

5. Lavender.

of chlorophyll. Its taste is bland and pleasant in the purest specimens, but varies with the locality where the fruit was grown; thus the oils from Tuscan fruits have a more agreeable flavour than those from Ligurian olives, so that the taste, as well as the purity, is a criterion by which the value is judged. Naturally the commercial oils show great variation in quality, for this depends, among other things, upon the variety of the olive itself, and Italy alone produces about 300 varieties of the tree. The degree of ripeness, the manner of gathering, and the mode of pressing the fruit are also factors influencing the quality of the oil.

Olive Oil
Characteristics.

Olive oil does not become gummy on exposure to the air. It is, in fact, a typical non-drying oil, and the commoner grades are largely used for lubricating. The best kinds for this are the Candia and the Spanish: Mogador oil has frequently a large percentage of free acid, which tends to corrode metallic surfaces, and it is on this account more fitted for soap-making than for lubrication. When olive oil stands for any length of time, a deposit forms upon the bottom of the receptacle; to prevent this affecting the quality it is necessary to decant the oil occasionally. These decantations are always undertaken if possible when the temperature is mild and the weather fine—in autumn or spring. Left to itself without precautions the best olive oil will become rancid. Olive oil also absorbs readily the odour of anything near it. The oil has to be stored in a cool, dry, well-ventilated chamber, sheltered from sudden variations of temperature; the French recommend a northern exposure for an oil-cellar.

A good deal of **adulteration** is practised with olive oils. Ground-nut, sesamé, rape, cotton-seed, and poppy oils are used for sophisticating the edible varieties. Those sold under fancy names, such as "sweet nut oil", "union salad oil", &c., are very frequently adulterated. Indeed, it is well for the retailer to adopt some such name, and sell the oil under the name of "salad" oil instead of "olive", unless he is certain of its genuineness. In the olive oils used for technical purposes hemp-seed, rape-seed, linseed, and mineral oils have been used as adulterants, as well as the substances already mentioned as being added to the edible oils. The United States Department of Agriculture has issued (1903), as the outcome of

Olive Oil
Adulteration.

special investigation, an instructive bulletin on the subject, from which we quote the following:—"Olive oil substitutes include the oils of cotton-seed, pea-nut, sesamé, maize, mustard-seed, rape-seed, and colza, sunflower, poppy-seed, and lard. Cotton-seed oil is the chief adulterant of, and substitute for, olive oil in America. It is used to a large extent under the name of salad oil, but is also frequently sold as olive oil, with which it is extensively mixed. The well-refined oil has a pleasant though characteristic taste and odour, and is much less liable to become rancid than are olive and other oils used in the preparation of salads. The cotton-seed oil sold for salads is refined in part by the use of alkali, and this treatment removes all free fatty acids. Pea-nut oil is probably used as an adulterant of olive oil more extensively in Europe than in America, where cotton-seed oil is so common. This oil has a pleasant nutty flavour, and makes a good salad oil, for which purpose it is largely used in Europe under its own name. Many of the ordinary chemical tests fail to distinguish this oil from olive oil, with which therefore considerable quantities of pea-nut oil might be mixed without being detected. Sesamé oil, like pea-nut oil, has a pleasant flavour, and is well adapted to the adulteration of olive oil. Maize oil is produced in large quantities in the United States, and, owing to its cheapness, may find use as a substitute for olive oil. This product, which is a semi-drying oil similar to cotton-seed oil, has so far been but little used for salad purposes. It has the flavour and odour characteristic of maize, and these qualities aid in its detection. Mustard-seed oil belongs to the rape-seed oil group, and differs but slightly in character from rape-seed oil. It is seldom, if ever, used as an adulterant of olive oils, although it is frequently added to rape oil, and this may find its way into olive oil. Means of detecting it in small quantities are as unsatisfactory as those for rape oil. The presence of sulphur compounds in the oils of cruciferous seeds, such as mustard, rape, and colza, affords, however, a means for the identification of these oils. If the latter are saponified with alcoholic potash and stirred with a silver spoon, the metal will become blackened by the formation of sulphide. Rape-seed and colza oils are less well adapted than some that have been named as substitutes for olive oil, owing to their acrid taste, even when well refined. Sunflower oil is

mild in taste and of pleasant odour, and the cold-drawn oil is stated to be used in some parts of Europe for culinary purposes. The characteristics of this oil are so widely different from those of olive oil that additions of even relatively small quantities to olive oil would easily be detected. The oil of poppy-seed, though used in Europe as a salad oil and for culinary purposes, and sometimes as an adulterant for olive oil, is not used in America to any extent, either as a salad or a cooking oil, and it is doubtful if it is ever employed as an olive oil adulterant. Lard oil is so manufactured that it remains liquid at ordinary temperature, and when well refined is entirely free from the taste and odour of lard. When heated, however, it develops this odour, which may serve as a means of detecting lard oil. Generally speaking, it may be said that in the examination of olive oils for adulteration, a complete analysis is usually necessary to reveal the real nature of the oil. In cases of gross adulteration the qualitative tests, specific gravity, and index of refraction will often show the nature of the adulterant and the extent to which it is employed." (Information as to the specific gravity, &c., will be found at the end of this chapter.)

Cocoa-nut Oil (also known as **Cocoa-nut Butter**) is obtained from the kernels of the cocoa-nut, especially those from the two species of palms, *Cocos nucifera* and *Cocos butyracea*, and is not to be confounded with *Cacao-butter* obtained from cocoa-^{Cocoa-nut Oil.} nibs (*Theobroma cacao*). It is mostly imported from Ceylon, Malabar, Java, Mauritius, and the Pacific Islands; and large quantities are expressed in this country and other parts of Europe from the dried kernels or "**Copra**", which is shipped to Europe in enormous amount. The oil is prepared from the crushed kernels either by pressure or by boiling with water and skimming off the fat. In our climate, at ordinary temperatures, it is a solid white fat—for which reason it has been mentioned in our chapter on Margarine and Butter Substitutes. When fresh it has a bland taste, and a peculiar, not unpleasant odour, but it readily turns rancid and disagreeable in flavour and smell. In commerce the chief qualities distinguished are: (1) **Cochin Oil**, the finest and whitest quality, prepared in Cochin (Malabar); (2) **Ceylon Oil**, chiefly imported from the island of that name, where the fat is expressed or boiled out on quite a large scale; (3) **Mauritius Oil**, of about the

same quality as Ceylon; and (4) **English Pressed** or **Copra Oil**, expressed or extracted from the imported "sun-dried" or "kiln-dried" kernels or "copra", and generally commanding a lower price than the foregoing. Cocoa-nut oil is used chiefly for making marine soap and night-lights; also, as mentioned in vol. iii, for the manufacture of "vegetable butters", and for the preparation of margarine.

Palm Oil (or "**Palm Butter**") is obtained from the fleshy part of the fruit-capsules of, chiefly, the Guinea Palm (*Elais guineensis*),

but also from the black-fruited palm *E. melanococca*, and

from palms of different genera, such as *Areca* and *Cocos*. This oil must be distinguished from Palm-nut oil or Palm-nut kernel oil, which is obtained from the *kernels* of the fruits, not from the fleshy portion. The West Coast of Africa, where, from Sierra Leone to Loango, the two first-named palms form vast forests, is the main seat of the industry; but Brazil, the United States, the West Indies, and the Canary Islands, also produce palm oil. For preparing the commercial "harder" varieties of the oil, the nuts are heaped, or placed in holes in the ground, and then covered and left until decomposition sets in; afterwards they are pounded to a pulp in mortars, warmed with water, and squeezed through bags to separate fibre, &c.; then the mixture is boiled up with water and the oil skimmed off. The finer and "softer" oils are simply expressed from the fresh fruit. In this climate the "oil" varies in consistency from that of butter (Lagos oil) to that of tallow (Congo oil). It has at first a bright orange-yellow colour, but exposure to the air eventually turns it dirty white, or dirty red in some cases. When fresh, the best qualities have a pleasant odour like that of violets; but in inferior kinds and old samples the smell is more or less rancid and disagreeable. Palm oil is used as a lubricant for railway-trucks, in soap and candle making, and in the tin-plate industry to protect the hot iron sheets from oxidation until they are dipped into the melted tin. There are a number of commercial brands—Lagos, Calabar, Congo, Loando, Saltpond, Niger, Benin, Bonny, &c. Lagos oil has the best reputation for purity. **Palm-nut Kernel Oil** (**Palm-kernel**, or **Palm-nut Oil**) is obtained from the inner white kernel of the above-mentioned fruits. The kernels are imported into Europe, and the fat obtained from them by expression or by extraction with solvents; it is white or pinkish in colour, has a pleasant smell and a

nutty taste. It is used as a substitute for cocoa-nut oil in soap-making, and in the preparation of artificial butter. This oil is also sometimes termed "**Copra Oil**".

Nut Oil, or **Walnut Oil**, is obtained from ripe walnuts by pressing. The cold-drawn oil is almost colourless, or of a pale yellowish-green tint, and has an agreeable nutty taste and pleasant smell: the hot-pressed oil has a greenish colour and an acrid taste and smell. The oil is a good drying oil. It is chiefly used by artists for paints, as the "skin" which it forms on drying is less liable to crack than that of linseed oil. (*N.B.* Ground-nut oil is sometimes referred to as "nut oil".) Nut Oil.

Ground-nut Oil (**Earth-nut**, **Pea-nut** or **Arachis Oil**) is obtained from the seeds of the ground-nut, *Arachis hypogæa*, largely grown in West Africa (Senegal, Congo, and other French possessions), in the East Indies, in America, Southern Europe, China, Japan, and tropical countries generally. Enormous quantities are sent to Europe for oil-making, the French West African colonies alone exporting over 100,000 tons of nuts per annum, mostly to Marseilles, where the nuts are worked up; whilst Calcutta and Madras also send large quantities to England and Germany. The cold-drawn oil of the first pressing is practically colourless, and has a pleasant taste resembling the flavour of kidney beans. It is used for culinary purposes as a salad oil, and for many of the purposes for which olive oil is employed. "Butterine oil" is given by a second cold pressing, and serves both as an edible oil and also for burning; whilst a third and cruder quality, used chiefly for soap-making, is given when the residue is hot-pressed. The crude pea-nut oil runs out thick, and has to be filtered to make it bright yellow. To produce a water-white oil, it is bleached by the use of animal black and fuller's earth. It is contended that no alkaline lye is used, but the art is somewhat secret. Superfine pea-nut oil is yellow, with a slightly greenish tint; it is brighter than American prime summer yellow cotton-seed oil. Ground-nut oil is used as a substitute for, and adulterant of, olive, lard, and neats-foot oils; and it is itself adulterated with cotton-seed, poppy-seed, sesamé, and rape oils. It adapts itself to a great variety of purposes. The famous Marseilles white soap is made from this oil. As an illuminant it gives a soft white light. Neutralized, it is highly rated for lubrication.

Linseed Oil is obtained from the seeds of the flax plant, *Linum usitatissimum*, by the methods already described. Russia, India,

and South America are the three chief countries
Linseed Oil. whence the seed is shipped to this country. Of the

Russian seed, two principal qualities are recognized in the trade, *i.e.* "Baltic" and "Black Sea" seed; and from these are expressed the corresponding "**Baltic**" and "**Black Sea**" oils. The oil obtained from the Indian seed is known as "**East India**" oil, and that from the South American seed as "**River Plate**" oil. Of these the Baltic oil has generally been considered the best of the Russian and Indian varieties, especially where the drying properties are concerned; this is due to the fact that the other two kinds of seed used invariably to contain more or less foreign seed admixed with them—hemp-seed, ravison, and rape in the Black Sea product; mustard, cameline, and rape in the Indian—and these foreign seeds yielded foreign oil when pressed; hence the "linseed" oil obtained was really a mixture. The Black Sea oil, however, is said to have improved recently in this respect. Cold-pressed linseed oil is golden-yellow in colour, the hot-pressed is brownish-yellow. It readily absorbs oxygen from the air, turns rancid, and dries, when spread in a thin layer, to a tough skin. In fact it is the best drying-oil, with one or two exceptions, and is therefore largely used for paints and varnishes, either in the "raw" state or as "**boiled oil**". It is also employed for oil-cloth making, and for the manufacture of soft soap. By treatment with chloride of sulphur it becomes vulcanized into an india-rubber-like substance, which is used as "rubber substitute" to replace india-rubber. Resin oil and mineral oils are the chief adulterants of linseed oil. "**Boiled Oil**" is prepared by heating matured raw linseed oil to a temperature of 210° – 260° C., either alone or with the addition of solid "**driers**"; or, alternatively, a newer method is adopted in which "**soluble driers**" are mixed with the raw oil. In this latter case the "boiled" oil may be prepared without heating it at all, or only to a much lower temperature than when solid driers are employed. The chief solid driers are litharge and manganese, acetate or borate; the "soluble" ones are resinates and linoleates of manganese and lead, dissolved usually in oil of turpentine. Only a small quantity of driers is necessary. Prepared in either way, the "boiled" oil acquires the property of drying to a varnish

much more rapidly than the raw oil. Hence it is extensively used in the manufacture of oil-varnishes and paints, as well as for oil-cloth making. The so-called "boiling" increases the specific gravity of the oil very notably; thus whilst the "raw" oil ranges from 0.931 to 0.937 in gravity, the boiled oil ranges from 0.939 to 0.950.

Rape Oil, or **Colza Oil**, is obtained from the seeds of several varieties of cruciferous plants (*i.e.* the cress and cabbage family), notably from the plant *Brassica campestris* and its allied species. "Brown" or "Sweet" rape oil is the oil as ^{Rape-}Colza Oil expressed from the seed; "Refined" oil, which is light-yellow in colour, and either has a slight characteristic smell, or else is nearly odourless, is obtained from the crude variety by refining with sulphuric acid and alkali, or by means of a current of steam. "English Refined" is a well-known trade quality; it is mainly prepared from seed imported from the East Indies and from various Continental ports. Almost all countries in Europe produce the seed and oil, Russia, Germany, France, and Belgium being the chief Continental sources of supply. The North German (Baltic) oil is generally somewhat heavier and less pure than the French and Belgian products; and Black Sea oil is also usually considered to be inferior in quality. In this country the distinction between rape and colza oils is becoming obsolete; all the kinds are often sold indiscriminately as either rape or colza. Where a distinction is made, the term "colza" should be restricted to the finest and lightest kinds of oil expressed chiefly from German or East Indian seeds. On the Continent three varieties are occasionally recognized: rape, colza, and rubsen. "Summer" and "winter" rape and colza oils are also sometimes distinguished from one another; but not much practical interest now attaches to these refinements. Rape oil exposed to the air does not dry, though it has a slight tendency to thicken and "gum". It is extensively used for lubricating machinery, and for making "compound oils" used as lubricants; also as a burning oil in railway and safety lamps; for soap-making, and for greasing steel goods.

Ravison Oil is a seed oil of the rape character, and, in fact, is often referred to in the oil trade as "Ravison-rape". The seed is grown notably in the Black Sea district, and was until recently often used to mix with linseed. It is frequently employed for the preparation of "blown" or oxidized oils.

Maize Oil ("Corn Oil") is either expressed from the seeds of the maize plant, *Zea Mays*, before using them for starch-making, or

else obtained from the residue in the vats after the maize

Maize Oil. has been fermented in the manufacture of alcohol. That obtained by the former method is of a pale-yellow or golden-yellow colour; that given in the second process is reddish-brown, and is apt to contain more free acid than the pale variety. Maize oil is employed as an illuminating oil, as a lubricant, and in soap-making. It is more viscous than olive or cotton-seed oil, but, like these, has no practical drying power. Recently it has been much used instead of cotton-seed oil for the preparation of factitious lard.

Chinese Wood Oil (**Japanese Wood Oil**) has the distinction of being the most rapidly-drying oil known. In this respect it is even better than linseed oil. It is produced in enormous quantity in China and Japan, where it is used chiefly as a natural varnish for wood, and also for illuminating purposes. Chinese junks are generally varnished with this oil, for which Canton and Hankow are the chief emporia. Wood oil is obtained by expression from the seeds of the tree *Aleurites cordata* or *Elæococca vernicia*, indigenous to China and Japan. The cold-drawn oil is of pale-yellow colour; the hot-pressed product is dark-brown, with an unpleasant odour and flavour. In this country, where it has only recently become a commercial article, it is applied to the general purposes of a drying-oil.

Cotton-seed Oil is prepared from the seeds of the cotton-plant, *Gossypium herbaceum* and allied species. These seeds, which may yield nearly half their weight of oil, are a by-product of the cotton industry, and are largely shipped to European oil-manufacturers from North America, Egypt, Algeria, and Italy. The oil is ex-

Cotton, Castor, and Blown. pressed from the seed in the general manner already described for seed-oils, and in the crude condition has a ruby-red to nearly black colour. The crude oil is refined into several qualities—summer-yellow, soap oil, winter-yellow, summer-white, and salad oil. By cooling down, or by simply standing for some time in storage-tanks, a solid portion is separated, which is sold as "cotton-seed stearine". As obtained in commerce, the refined oil is usually of pale or golden yellow colour and with a pleasant nutty taste; but it may be so highly purified as to be practically tasteless and inodorous. Cotton-seed oil is much used for culinary purposes,

such as for fish-frying and as a salad-oil; and also for many of the uses to which olive oil is put. It is extensively employed for adulterating this latter oil, and, in America, for the preparation of "lard compound" and in the making of ointments. The less highly refined grades are used for soap and candle making and for lubricating machinery. Considerable quantities of the oil are employed in the production of margarine. The oil solidifies when cooled to the temperature of melting ice, or a few degrees lower in some cases.

Castor Oil is expressed from the seeds of the castor-oil plant, *Ricinus communis*, of which seeds it forms nearly half the weight. The seeds are grown in large quantities in India and Java; and the oil is expressed in several countries, including the United Kingdom, France, Italy, and America. The chief commercial qualities are the first and second "pressures" of the various countries. The oil is colourless or pale-greenish, transparent, and has a taste which is at first mild, then harsh: this harshness is more marked in the American than in the Italian or French oils. It has the highest specific gravity, and the greatest viscosity, of any natural fatty oil; the former constant lying usually between 0.960 and 0.964, which is only approached by the specific gravity of **blown oils**. Castor oil is used in medicine, in making cheap transparent toilet soap; in lubricating heavy machinery, and for making Turkey-red or alizarine oil, used in the dyeing of cotton goods.

Blown Oils, which are also known as **Base**, **Oxidized**, **Thickened**, or "**Soluble Castor**" oils, are made by blowing air through warmed linseed, rape, cotton-seed, lard, olive, and other oils for one or more days. Under this treatment the oils take up oxygen from the air and become as dense as, or denser than, castor oil, while at the same time their viscosity is much increased. These dense and viscous oils are claimed to be specially suitable for lubricating heavy machinery, and they are largely used for this purpose, especially when compounded with mineral oils. It is because they are perfectly miscible with these latter oils that they are often employed instead of castor oil, which dissolves in the heavy mineral oils to a very limited extent only. Hence also the name "soluble castor", by which the blown oils are sometimes known. Blown oil is usually of a clear yellow colour, and has a disagree-

able smell and taste. Black Sea rape, or ravisson oil, is the kind most generally used in making these "thickened" or blown oils.

Sesamé Oil (Gingili or Teel Oil) is a yellow, nearly odourless, pleasant-flavoured oil extracted or pressed from the seeds of the
 Sesame. sesamé plant, *Sesamum orientale* or *S. indicum*. The cold-drawn oil is considered equal to olive oil as an edible oil, or even, by some, preferred to it on account of the agreeable taste. Sesamé oil is much used in margarine-making, and in Germany it is compulsory to add 10 per cent of the oil to all margarine made, for the purpose of facilitating the detection of margarine in butter. The recognition depends upon the fact that even minute quantities of sesamé oil yield a crimson colour when the fat (or other oil) containing it is shaken up with hydrochloric acid and a little sugar or furfural. The adoption of the same system as in Germany, namely, the compulsory addition of sesamé oil to all margarine, was recommended in 1903 by the Butter Regulations Committee appointed by our own Board of Agriculture.

Salad Oils or "**Sweet Oils**" are trade terms. Cold-drawn cotton-seed, ground-nut, and sesamé oils are the three oils usually included in the commercial term "salad oils"; but several varieties are used for salad and general culinary purposes. The chief of these, besides olive oil and the three just mentioned, are poppy-seed, beech-nut, sunflower, and nut oil; also, to some extent, best rape oil and camelina or "German sesamé" oil. The sale of mineral oil as "sweet oil" entails risk of fine.

Sunflower Oil is largely made in Russia, where its use has superseded all other vegetable oils in many parts of the country. India, Germany, and Italy also grow the plant for oil-making. When purified, the oil, which is of a pale-yellow colour, is considered by some to be equal to olive and almond oil for table use. It is particularly good, however, for soap-making, and is also used for dressing wool, lighting, and candles.

GROUP III.—MINERAL OILS

The **mineral oils** are derived from two main sources, liquid petroleum and solid oil-shales. The former is found in large

quantities in a number of places, and in small springs it is found almost all over the world. The commercial petroleum oils met with in this country come mainly from the United States, Southern Russia, Borneo, and, recently, from Roumania; but considerable supplies are available in Galicia, ^{Mineral Oil-fields.} Canada, Peru, Burma, Java, Sumatra, and Japan. Oil-shales occur chiefly in Scotland (Midlothian and Linlithgow); and deposits of a similar mineral are found in New South Wales and a few other localities. More than nine-tenths of the American oil is yielded by two great oil-fields, the Appalachian and the Lima-Indiana. As regards the States concerned in mineral oil production, we may say that in round numbers the total output is nearly 70 million barrels of crude petroleum per annum, and that, of this quantity, Ohio furnishes some 20 millions, Pennsylvania and West Virginia 15 millions each, Indiana 6, California 9, and New York $1\frac{1}{4}$. Texas, too, is now showing rapid development as an oil region. In Russia, the chief oil-producing district lies a few miles from Baku, both north and south of the town, which is situated on the Apscheron peninsula near the Caspian sea. Another large field, the Grozni, is also being worked in recent years: this lies some 500 miles north of Baku in the Terek district. The total production of crude petroleum in the Baku region alone is now greater than the American output, being approximately 75 million (American) barrels per annum. In Scotland over two million tons of shale per annum are distilled for its oil, the yield being about $1\frac{1}{2}$ to $1\frac{3}{4}$ million barrels of crude oil.

Petroleum occurs in all the chief geological formations, but the most important American deposits are in the Silurian and Carboniferous strata; those of Southern Russia are also in the Carboniferous; the Roumanian are in the Lower Cretaceous, and the Burma, Java, &c., in the Miocene. ^{Geology and Origin.} This last is the youngest of the formations mentioned, and the Silurian is the oldest. The Scotch oil-shales occur in the Calcareous Sandstone strata below the Coal Measures, and only in the district lying between Edinburgh and Glasgow. As regards the origin of petroleum, there are several theories held, and strong arguments are advanced for some of them, but at present none can be regarded as definitely and finally proved.

It is accepted as most probable that some descriptions have been produced by the decomposition of animal remains; whilst other kinds, and notably the Pennsylvania type of oil, have been formed from vegetable deposits. As an example of how this might occur, the subterranean distillation of coal-beds by the earth's heat may be mentioned as one of the possibilities.

In America the crude petroleum has usually to be pumped out of the well, though in many cases it flows spontaneously. In

American Oil Production. America it is, as a rule, first passed into a large storage and measuring tank, where it is allowed to

settle, and the quantity gauged. It is then led away for refining and exportation by trunk lines of pipes, which are laid through the oil-fields and run for great distances—in some cases the pipeline is over a hundred miles in length. Crude petroleum as obtained from the wells varies a good deal in appearance and properties. Some varieties are pale-yellow or almost colourless, others are dark, heavy-looking oils; usually, however, the crude oil is of a greenish colour. It consists of a complex mixture of hydrocarbons, of which a small number are gaseous, some liquid, and others solid (paraffin wax); the first and last being dissolved in the second or liquid portion. The object of the refiner is by a process of distillation to separate this mixture into various commercial products, which are, broadly speaking, four, viz. **Naphtha, Burning Oils, Lubricating Oils, and Solid Paraffins.** The relative proportions of these vary, but roughly the burning oils form about 40 to 50 per cent of the crude oil, and the lubricants 20 to 30 per cent, the Naphtha, Paraffin, and Tar making up the remainder. The crude oil from the wells or pipe-lines is passed into tanks, warmed with steam-pipes, and allowed to settle free from dirt, &c. It is then run into the petroleum stills, which are heated either by fire alone or by both fire and superheated steam. The lighter, more volatile “naphthas” are the first to distil over. The specific gravity of the distillate is observed from time to time, and when it reaches about the value 0.770 it shows that the naphtha is all distilled. The portion next coming over, viz. the kerosene or burning oil, is then diverted into another receiver. These naphthas and burning oils are further refined into different products by first purifying them with sulphuric acid and caustic soda, and then

redistilling them. The various oils obtained are distinguished according to their specific gravity, as follows:—

Naphtha yields:

	Specific Gravity.
Gasoline	0.642–0.648
Petrol, or motor-car spirit	0.680
Benzoline, or deodorized naphtha	0.700
Benzine	about 0.730

On again distilling, the Benzoline, if desired, can be, and usually is, separated into various qualities of “**Petroleum Spirit**” or “**Petroleum Ether**”, with specific gravity ranging from about 0.630 to 0.730; these are largely used for extracting resins, gums, fats, &c.

The **Burning Oils** or **Kerosene** portion is refined into several kinds, but of these only two are imported into this country, as a rule. These are:—

(a) The ordinary commercial lamp oil (American), generally imported as “**Petroleum Oil**” or “**Refined Oil**”, and sold under various names, such as **Kerosene**, **Crystal Oil**, **Paraffin Oil**, **Tea Rose Oil**, **Royal Daylight**, and so on. This quality has a specific gravity of about 0.796, and a flash-point of a little above 73° F. by the Abel test. It is usually of a pale-yellow colour.

(b) “**Water-white**” or “**High-test**” oil (sold as “**White Rose**”, “**Snowflake**”, &c.). This is nearly colourless, has a specific gravity of about 0.788, and a flash-point of over 100° F., whence its appellation “high test”.

In addition to the foregoing, “**Mineral Colza**” (mineral sperm or mineral seal oil) is also produced to a relatively small extent; its specific gravity is 0.825 to 0.830, and its flash-point about 250° F.

The residuum in the still, after the separation of the naphtha and petroleum oil, yields, on further distillation and repetition after treatment with sulphuric acid and soda, first an intermediate or “gas oil”, and then various lubricating oils, vaseline, and paraffin wax. The chief lubricating oils thus obtained are “Light pale” or “lemon yellow”, “Medium pale” or “yellow”, and “Heavy pale”. These have, respectively, specific gravities of about 0.880 to 0.885; 0.900 to 0.905; and 0.905 to 0.910.

Lubricating
Oils.

In addition to these there are several other important kinds of lubricating oils imported, which may be summarized as follows:—

Cylinder Oils are thick oils obtained like the foregoing, but from special varieties of crude American petroleum, and are contained in the “residuum” left after separation of the naphthas and kerosene. From this residuum they are obtained by distilling with super-heated steam, cooling down, and straining free from any paraffin wax and other solid matters. Or, sometimes, instead of using steam, the whole distillation is carried on in a partial vacuum, to prevent “cracking” or decomposition of the heavy oils into lighter products. The “**Dark Cylinder Oils**” thus obtained are either sold as such direct, or else are filtered through charcoal to lighten the colour and marketed as “**Filtered**”, “**Extra Filtered**”, &c. Cylinder oils range in consistency from thick viscous liquids to soft “butters”, and in colour from pale-brown to nearly black. The chief commercial varieties of this class are known as Dark, Dark Red, Cosmos, Filtered, Extra Filtered, F.F.F. Valve Oil, and H.V. or Heavy Valve Oil. Their specific gravities range from 0.875 to 0.905.

Vaseline and **Petroleum Jelly** are practically cylinder oils of a particular consistency, well purified by repeatedly passing through charcoal. **Spindle Oils** are the lighter lubricating oils obtained during the preparation of the cylinder oils, and distilling over before the latter. “**Summer Dark**” and “**Winter Dark**” machinery oils are varieties of petroleum which may almost be called natural lubricants, since they require very little in the way of manufacture. They are obtained from Ohio, West Virginia, Kentucky, and other states. It is not necessary to distil them, as they contain only a small proportion of light oils. These are driven off by heat, and the residual oil is then marketed, either with or without previously passing through charcoal to improve its colour.

From the crude petroleums of the Russian province of Baku, which differ both among themselves and from the American oils,

Russian Oils. the products obtained are also different from those given by the latter. The “residuum”, which is known as “**Astatki**”, is not much used as a source of high-class lubricating oils and paraffin waxes, as is the American, but is largely employed for liquid fuel, which is really the principal product.

It constitutes about one-half of the crude oil; the remainder yields about 5 per cent of benzine, 30 to 40 per cent of kerosene or **burning-oil**, and from 5 to 20 per cent of "**solar oil**". The kerosene gives the ordinary **Russian lamp-oil**, such as, for example, is sold as "Star and Crescent", "Syringa", and so on. Its specific gravity is about 0.825, and its flash-point about 85° F. by the Abel test. A little "High-test" oil is also produced—*e.g.* the "Testefas" brand—with specific gravity 0.823, and flash-point of about 100° F. **Solar Oil**, or **pyro-naphtha**, is also used in lamps; it is a good illuminant. Its specific gravity is about 0.865, and flash-point about 250° F.

Russian burning-oils are of good quality and high flash-point. They have a violet-blue bloom, and are rather darker and redder in colour than the American oils. Moreover, since they do not deposit solid paraffin when cooled, they are specially suitable for cold climates. Some high-class **Russian lubricating oils** are produced; but generally the Russian oils, when used alone, have a tendency to clog, and in practice it is found better to mix them with a certain proportion of American oil. In fact, it is said that most of the American machinery and cylinder oils can be very closely matched by blending Russian heavy oils with American spindle qualities.

Roumanian crude petroleum is rather of the American than of the Baku type. It yields about 50 to 55 per cent of kerosene and benzine. The imported kerosene has a specific gravity of about 0.810, and a flash-point of about 74° F. At present the lack of capital and transport facilities is rather hampering the development of the Roumanian oil industry.

In **Scotland** the oil shales, which are black, flaky, or slaty masses, are distilled in large iron retorts, yielding under this treatment a distillate consisting of water, ammonia, and a thick, brown, "**crude oil**". The ammonia is Scottish Oils. converted into sulphate of ammonia, and forms an important by-product which is much used as a fertilizer. The "crude oil" is redistilled, purified by treatment with sulphuric acid and caustic soda, and again distilled, being in this last operation separated into three fractions, which are severally known as "green naphtha", "twice-run light oil", and "green oil". On again purifying and redistilling the first two of these fractions, the

green naphtha yields "**gasoline**" and "**naphtha**" ("shale spirit"); the light oil gives **burning oils** and **gas oil**; whilst the green oil, on cooling down and pressing, yields "**blue oil**" and a residual cake of "**paraffin scale**"; the "blue oil" being further separated by distillation into "**mineral colza**" and **light, medium, and heavy lubricating oils**. The shales yield about 30 gallons of oil to the ton, and the crude oil gives about 5 per cent of shale spirit (gasoline and naphtha), 40 per cent of burning and gas oils, 20 per cent of lubricants, and 10 of solid paraffins. The "burning oils" are those ordinarily known as "**paraffin oil**", "**petrolin**", "**crystal oil**", &c. They generally have a specific gravity of about 0.810, and a flash-point of approximately 145° F.

The "paraffin scale" is either put on the market as such, or else is further refined into "hard" and "soft" paraffin.

It has been mentioned in the chapter on Licenses that those products come under the Petroleum Acts which "give off inflammable vapour" at a temperature below 73° F. The

Flash-point. temperature at which an oil does give off such vapour, in the sense intended by the Act, is called the "flash-point" of the oil. The phrase of the Act quoted above is not very happily worded. Petroleum gives off vapour at any temperature, whether below or above 73°. When sufficient vapour has diffused into the air near it to make a mixture, of which the vapour forms a certain definite proportion (rather less than 2 per cent), then, and not till then, the mixture becomes inflammable. What is really meant by "flash-point", therefore, is the temperature at which enough vapour is present to form an inflammable mixture with the air near it. But this, obviously, depends not only on the quantity of vapour, but upon the quantity of air also. That is, it depends upon the kind of apparatus used to determine the flash-point. When the oil is freely exposed to the air a very much higher temperature is needed than when a closed vessel is used during the heating. Hence it is necessary to specify the apparatus which is to be used for testing the oil, and the instrument officially recognized is the "**Abel**" **close-test** apparatus. This instrument is made to stipulated dimensions in order to obtain uniform results. It consists of a metal oil-cup, filled up to a fixed mark with the oil to be tested, in which the bulb of a thermometer is placed. The cup is covered with a sliding lid. On being slid back, this lid

uncovers a small aperture in the top of the oil-cup, and by the same movement it also deflects a tiny gas-jet into the aperture. The oil, being gradually heated by a suitable arrangement, gives off an increasing amount of vapour which mixes with the air in the upper part of the cup, until, eventually, the mixture will ignite or "flash" when the little gas-jet is lowered into it. The temperature to which the oil has to be heated before this occurs, as recorded by the thermometer whose bulb is in the oil, is the "flashing-point" of the oil. This is known as the "close" test, and is the official method. An "open" test is also used by oil-refiners as a rough guide in some cases. The oil is then contained in an open vessel, and the flash-point is about 15° higher than would be given by the close test.

The adoption of a higher flash-point than 73° would favour Scottish and Russian oils as against American, and no doubt such a course has something to recommend it from the point of view of safety also. Still, there is much loose talk indulged in about the dangers of "low-flash" oil. Many accidents are attributed to this cause which are really due to faulty lamps or to breakages, which would have occurred whatever oil had been used. An oil with flash-point of 100° may be just as dangerous as one of 73° if carelessly handled.

GROUP IV.—ESSENTIAL OILS (VOLATILE OILS)

Essential oils, speaking broadly, are odoriferous substances of an oily nature obtained from plants, and, as a rule, are either spontaneously volatile at ordinary temperatures, or else are capable of being volatilized by heat without suffering decomposition. Some essential oils, however, cannot be volatilized unaltered by themselves, and have to be distilled with steam. Essential oils are generally liquid; some are semi-solid. They occur in all parts of the plant in some cases; in others only in special organs. Thus oil of turpentine may be found in most parts of the fir-tree, whereas oil of roses is restricted to the flower-petals.

To obtain the oils from their vegetable sources there are three principal methods in use:—(1) With rather soft material containing a fair amount of oil, such as the peel of oranges, lemons, ber-

gamot, &c., the substance may be wrapped in a cloth and pressed, much in the same way as is done in expressing the ordinary seed-oils. Many oils of this "peel" class, however, are now obtained by the use of special machinery and devices in which the oil is absorbed by sponges. (2) With a large number of plants, especially such as contain no great quantity of the oil, the method employed is the distillation of the flowers, leaves, &c., with water. The steam carries over with it the essential oil of the plant. (3) The third process is the extraction of the oil from the vegetable material by means of a solvent, such as carbon disulphide, ether, or benzine. In any case the oil obtained by these methods has, of course, to undergo subsequent separation and purification. Thus the distilled oils are necessarily mixed with condensed water during the distilling operation, but on standing, being lighter than water, they rise to the surface and form a distinct layer on the top of the aqueous liquid, from which they can thus be separated.

For flowers with delicate odours the French method of "**enfleurage**" is used. This consists in spreading the fresh flowers on a thin layer of pure fat, which absorbs the odorous oil from them; the flowers are then replaced by others, these by fresh ones, and so on, until the fat has become strongly impregnated with the scent. The latter can then be extracted from the fat with alcohol, and the spirit used as one of the ingredients of a perfume.

The **Constituents of Essential Oils** are rather numerous, but by far the greater proportion of them are comprised in five classes of compounds, namely:—(1) Terpenes, which occur very frequently, and consist of such bodies as are found, for instance, in eucalyptus oils, turpentine, and oil of cloves; (2) Camphor compounds consisting of substances allied to or derived from camphor; (3) Benzine derivatives, such as benzaldehyde, the chief constituent of essential oil of almonds; (4) substances similar to Geraniol, the characteristic component of oil of geranium and of rose-oil; and finally, (5) various Alcohols, Acids, and bodies allied to these.

Some hundreds of **Varieties** of essential oils are known. Of these, however, many are of little or no interest in the present connection. A few of the more common are the oils of—Almond, aniseed, bergamot, caraway, cardamoms, cassia, cedar-

**Methods of
Manufacture.**

**Essential Oils:
Constituents
and Varieties.**

wood, citron, cloves, chamomile, dill, eucalyptus, fennel, geranium, juniper, lavender, lemon, mace, mustard, neroli, patchouli, penny-royal, peppermint, pimento, pine-needle, rosemary, roses, santal-wood, sassafras, thyme, turpentine, and winter-green. Of these, oil of turpentine is perhaps the only one which need be here referred to at length.

As regards the uses of the essential oils, a large number, especially of those having a delicate odour, are employed in perfumery. Many others are used as flavouring bodies in confectionery and general culinary work, and considerable quantities of some varieties are employed in scenting fancy soaps. Others, again, are used in medicinal preparations, either as stomachics, or, like eucalyptus oils, on account of their antiseptic properties.

Oil of Turpentine (Spirits of Turpentine, "Turps") is obtained from various species of pines, the chief being *Pinus australis*, the yellow or Georgia pine, from which comes most of the American oil; *Pinus sylvestris* or Scotch fir, yielding ^{Turpentine.} the German and Russian product, and *Pinus pinaster* and *P. maritima*, from which the French oil is derived. Crude turpentine is exuded from the wood of these trees; it consists of resin dissolved in various liquids called "terpenes", which latter constitute the oil or spirits of turpentine. In America, holes or "boxes" are cut into the trunks of the trees, a few inches above the ground, during the autumn and winter. The trees are afterwards barked for a yard or so up, and the wood punctured. During the next spring and summer the crude turpentine exudes and collects in the boxes, whence it is later on ladled out into barrels. Subsequently the liquid portion is distilled with water to separate the oily terpenes from the dissolved resin. The steam and turpentine distil over together, the resin remaining behind; but the turpentine in the distillate, being the lighter of the two, floats on the top of the condensed water, and is easily separated from it. American, French, German, and Russian are the chief commercial varieties of turpentine imported into this country, "American spirits" being the most important kind, and the French coming next. Others of less moment are the Hungarian, Austrian, and Finnish products. The best for paint and varnish are "American" or "Canadian" (practically identical). French is but little inferior; Russian, and a similar oil of Prussian origin,

are accounted very inferior. Scandinavian is not much met with commercially. The principal distinction between the American and the French turpentine lies in their different actions on polarized light. Like a solution of sugar or a plate of quartz, turpentine possesses the property of what is called "rotating the plane of polarization" of such light, the result being visible as a colour-effect in a suitable optical instrument. (See the chapter on SUGAR, vol. ii.) Whereas American turpentine almost invariably—there are occasional exceptions—gives a "right-handed" rotation (like cane sugar), the French variety produces a "left-handed" one (like invert sugar).

Turpentine is readily distinguished by its odour. It is limpid and colourless, and has a pungent and bitter taste. Good commercial turpentine has a specific gravity lying between 0.858 and 0.870, except in the case of Russian, which is often as high as 0.875. Its boiling-point is generally 155° to 156° C., and in the best class of oils at least 85 per cent of the whole distills over below a temperature of 165° C. A good-quality turpentine should only leave a very small quantity of resinous residue when evaporated on a steam bath, old oils giving more than new. Adulterated turpentine to which mineral oil has been added is sometimes sold. As a by-product of turpentine manufacture we may mention here:—

Rosin or Resin, of which the chief imports are the American ("strained" and "pale"; the latter being the better quality), is the residue left after the oil of turpentine has been drained and distilled away from the crude turpentine or natural balsams, exuding from the trees as above described. It is largely used by soap-makers and varnish-compounders. **Sanitas** disinfectant is also a turpentine preparation, being essentially a slightly-oxidized fraction of the oil.

Chemistry of Oils.—A few notes upon the salient points of oil-chemistry may prove useful. Many volumes have been written on the subject without by any means exhausting it, so that we shall here be only able to glance rapidly at the chief items of interest.

All the vegetable oils, and all the animal oils except sperm, bottle-nose, and one or two allied oils, are what are known as **glycerides**, or compounds of glycerine with various fatty acids. The mineral oils, on the other hand, contain no glycerine; they are, as their alternative name "hydrocarbons" denotes, compounds

of hydrogen and carbon. The differences that exist between one vegetable or one animal oil and another, or between a vegetable oil and an animal oil, are due to the facts that (1) different fatty acids are combined with the glycerine to form different glycerides; and (2) these various glycerides are present in different *proportions* in different oils, even when they are of the same *kinds*. Thus olive oil contains a large proportion of the non-drying glyceride "oleïn", and linseed oil, though it also contains some oleïn, includes a large quantity of the drying glycerides "linoleïn" and "isolinoleïn". The various mineral oils differ from one another in containing different kinds of hydrocarbons, present in different proportions.

In distinguishing the various oils from one another, and in detecting admixtures of one with another, the trade chiefly relies upon three ready tests—taste, smell, and specific gravity. All these criteria may fail in detecting certain mixtures. In this case recourse is had to the chemist, who, in addition to the foregoing, mainly employs tests known as follows:—(1) "Saponification" of the oil; (2) "iodine" absorption shown by the sample; (3) its refractive power; (4) certain colour reactions of the oil; and (5) certain special tests in special cases, such as, *e.g.*, taking the "flash-point" of the sample, or its viscosity, its drying-power, and so on.

Oil-testing.

Specific gravity is a very important factor in oil-testing. The term denotes the weight of any definite volume of the oil, divided by the weight of the same volume of water at the same temperature. For rough determinations a hydrometer or "oleometer" is generally used; this is an instrument which is immersed in the oil, and which sinks to a greater depth in a light oil than in a heavy one. The point to which it sinks is read off on a scale attached to the stem of the instrument, and this shows the specific gravity. Dealers in sperm and similar oils commonly use a special oleometer devised by Casartelli, on the scale of which water is marked 0°, and rape oil 28°. Sperm oil stands at 44° on the same scale, and southern whale oil at about 24°. For more accurate work an instrument called a "Westphal balance" is used, or a "specific-gravity bottle", and the temperature is carefully noted, that chosen for ordinary liquid oils being 60° F., and for the solid or semi-solid oils either 100° F.

or 212° F., these higher temperatures being necessary to bring the oils into the liquid state. The specific gravity is sometimes expressed in hydrometer-degrees as noted above; but the more general and the more precise method is to denote it by the decimal fraction given by dividing the weight of the oil by the corresponding weight of water. In practice the actual arithmetic is unnecessary; with a hydrometer the division is already included in the graduation of the instrument; and with a specific-gravity bottle the instrument is made to hold, for example, exactly 1000 grains weight of water; so that if the bottle holds 915 grains of olive oil the specific gravity of the oil is at once written down as 0.915—that is, $915 \div 1000$.

The specific gravities of a number of oils are given in the following table:—

Animal Oils.

Specific Gravities.

Seal oil	...	...	...	.916 to .929	at 60° F.
Cod-liver	...	...	...	.922	„ .930 „
Whale	...	...	...	.920	„ .931 „
Herring, sprat, &c.	...	...	...	.928	„ .932 „
Sperm	...	...	...	.875	„ .884 „
Arctic sperm	...	...	...	.876	„ .881 „
Lard oil	...	...	...	.915	„
Tallow	...	...	...	.916	„
Neat's-foot	...	...	...	.914	„ .916 „
Bone	...	...	...	.914	„ .916 „

Vegetable Oils.

Olive oil	...	...	...	.914	„ .916 „
Olive kernel	...	...	...	.920	„
Ground-nut	...	...	...	.916	„ .922 „
Almond	...	...	...	.914	„ .920 „
Peach and apricot	...	...	...	.918	„ .920 „
Rape (colza)	...	...	...	.911	„ .917 „
Ravison	...	...	...	.918	„ .922 „
Cotton-seed	...	...	...	.916	„ .930 „
Sesamé	...	...	...	.921	„ .924 „
Maize	...	...	...	.916	„ .924 „
Sunflower	...	...	...	.924	„ .926 „
Castor	...	...	...	.958	„ .970 „
Linseed, raw	...	...	...	.931	„ .937 „
„ boiled	...	...	...	.939	„ .950 „
Chinese wood	...	...	...	.937	„ .940 „
Palm	...	...	...	.920	„ .945 „
Palm-nut kernel	...	...	...	.952	„
Cocoa-nut	...	...	...	.868	„ .874 at 212° F.

The specific gravities of the mineral oils have already been given in connection with the various groups.

Saponification.—When an oil of the vegetable or animal groups (except sperm and bottle-nose) is heated with solution of an alkali (caustic soda or potash), the alkali displaces the glycerine from its combination with the fatty acids, and itself combines with these acids to form a “soap”. This operation is called “saponification”. Now different oils require, generally speaking, different quantities of alkali to effect this saponification; hence, by determining experimentally exactly how much alkali a sample requires, an idea of its state of purity can often be obtained. For instance, genuine linseed oil requires about $19\frac{1}{2}$ per cent of its weight of caustic potash for complete saponification; hence if a tendered sample is found to require, say, only 17 or $17\frac{1}{2}$ per cent, it can be said decisively that the sample is adulterated. Mineral oils, since they contain no glycerine, do not saponify, and thus do not require any alkali; hence an admixture of mineral oil with a vegetable or animal oil lowers the saponification value of these, and is at once indicated by the test.

Iodine absorption.—Most oils, when treated with a suitable chemical reagent containing iodine, will take up this element, and the amount absorbed varies for different oils. Thus raw linseed oil will take up 175 per cent of iodine, or $1\frac{3}{4}$ times its own weight; whereas rape-seed oil absorbs only about 100 per cent, and neat's-foot 70, or less than three-fourths of its weight; and some mineral oils take up practically none at all. The percentage of iodine absorbed is generally referred to as the “iodine number” or the “Hübl figure”, and a determination of this value will, in many cases, show at once whether an oil is genuine or not. Where, however, the iodine number of the adulterant is nearly the same as that of the genuine oil, the indication of admixture becomes uncertain, and the “Hübl” test has then to be supplemented by others.

Refractive power.—Different oils or groups of oils will refract a ray of light to different extents. Instruments (“oleo-refractometers”) have been constructed by which the deviation of the ray can be very easily measured on a scale of divisions attached to the instrument, and this measurement often affords a means of discriminating between genuine and sophisticated oils. Thus the

“reading” for olive oil in one of the best-known instruments is 0° to 1° , whereas for ground-nut oil it is 4° to 5° , for cotton-seed 20° , and for linseed 50° . Hence an admixture of cotton-seed oil would raise the refraction of olive, and lower that of linseed, beyond the normal values for these two oils.

Colour reactions.—Some of the oils, especially those of the seed and fish groups, yield characteristic colours when mixed with sulphuric acid, nitric acid, or a mixture of the two acids. Seal oil, for instance, when stirred up with one-tenth to one-twentieth of its volume of strong sulphuric acid, becomes bright red, changing to mottled brown; whilst sperm oil under the same conditions becomes purple, changing to reddish or dark brown.

Of the various special reactions of the oils, the flash-point and viscosity are very largely used for the testing of burning and lubricating oils. Flash-point has already been dealt with (see pp. 70–71). As regards viscosity or “body”, the more viscous an oil is, the longer will it take to flow through a given aperture, and the test is based upon this principle. For certain purposes oils with a high viscosity are unsuitable; for others (*e.g.*, for use with heavy machinery) a more than average amount of viscosity is necessary.

As is the case with most natural products, oils show a certain variation of quality even when genuine, and the analytical criteria of one oil often overlap those of another. Since allowance must be made for this variation, it is often possible to adulterate oils to a certain extent without the oil-analyst being able to say positively that the sample is not genuine. But unless done with knowledge and care such sophistications are always liable to detection.

A good deal of attention is now paid to the amount of free acid in oils. Free fatty acids render the oils unsuitable for lubricating and for burning when present in excessive quantity; in the former case they cause “pitting” or corrosion of the machinery, in the latter they tend to smokiness. For soap-making and some other purposes the free acid is of little consequence. Not more than 3 per cent of free acid, calculated as oleic acid, is now generally accepted as the limit for lubricating oils, though some authorities increase this maximum to 5 per cent in the case of olive oil. The average proportion of free acidity in some ordinary oils of good quality is: Refined rape, 1 to 3 per cent;

Acidity of
Oils.

filtered olive, 2 to 5 per cent; French castor, first pressure, 1 to 4 per cent; refined cotton-seed, 0 to 1 per cent.

5. WAXES, SOAPS, AND CANDLES

Commercially, tallow is classed as "beef" and "mutton" tallow, but each of these varieties often contains the fat of other animals besides the ox and sheep. In preparing tallow, the fat is cut into small cubes by suitable machinery and then melted. This melting is done in one of three different ways: (1) by steam under pressure, in closed vessels; (2) by "dry rendering", or heating in an open pan over direct fire; and (3) by first mixing it with dilute sulphuric acid or caustic-soda solution, and then warming the mixture in an open pan over direct fire. In the first and third methods the melted fat floats on the top of the aqueous liquid, and is drawn off from the skin and other tissues; in the second process the fat after melting is poured off as far as practicable, and the residue ("greaves") pressed in a greaves-press to extract the remainder. In either method the fat thus obtained is kept warm and allowed to clarify by settling. The use of the chemicals in the third process is to disintegrate the cellular tissues, and thus facilitate the escape of the fat. The crude tallow thus prepared is, when desired, refined by boiling it with water, or by passing steam into the melted fat, or, in some cases, by treatment with suitable chemicals. As it is often too soft for market requirements when prepared as above, it is frequently hardened by means of nitrous acid (or by a mixture of nitric and sulphuric acids), which converts the soft or "olein" portion into hard "elaidin". By pressure, a considerable portion of the olein of tallow can be removed, and forms a "tallow oil", the solid residue constituting "tallow stearine".

Good tallow is of hard texture, white or pale-yellow in colour, and when quite fresh has practically no odour or flavour; but after a short time it acquires its characteristic "tallowy" smell. Much of that met with in commerce has a yellow colour and disagreeable rancid flavour. South America, Australia, and Russia chiefly supply us with tallow. It is said,

Tallow.

Tallow
Characteristics.

however, that very little real Russian tallow is now put on the market, and that what is sold as such is usually a mixture of Colonial beef and mutton tallows. Or, for Russian tallow of high melting-point, the Australian mutton tallow alone is supplied, being a very similar article in general character. The better kinds of Colonial tallow are usually classified according to colour and condition as "edible", "finest", "fine", "good", and "dull" or "dark". "Town tallow" is an article of moderate to low quality, chiefly prepared from waste kitchen fat, bone grease, and other refuse fatty materials. "Melted stuff" and "rough stuff" are inferior kinds used for soap-making.

Tallow is not used so much now as formerly for direct lubrication, but more for lubricant mixtures made up with heavy mineral oils and tallow. For use with machinery it ought not to contain more than 3 per cent of free acid. It is also employed for leather-dressing and in soap-making, and to some extent for the manufacture of candles. For this last purpose it is sold according to what is called "Dalican's titer test", which affords a means of judging approximately how much **solid fatty acids** (or so-called "stearic acid") the tallow will yield, and how much "liquid fatty acids" (oleic acid). This "titer test" consists in determining at what temperature the mixed fatty acids, obtained from the tallow and melted, solidify again; if the solidifying point is as low as 40° C. the tallow will only yield about one-third of its weight of solid acids (which are the only ones fit for candle-making); if 45°, about one-half; and if 50°, the yield will be about three-quarters of the weight. Tallow frequently contains more or less water and mineral impurities. The adulterations practised are usually the admixtures of cheaper fats, such as "fish tallow" (whale fat from pressed whale oil), bone fat, wool grease, cotton-seed "stearin"; and occasionally starch, and such mineral matters as china-clay, whiting, and barium sulphate.

In commerce several products pass under the name of "**stearine**", and none of them correspond to what is denoted by "**stearin**" in the strict scientific sense. Stearin proper is a constituent of most animal and many vegetable fats, and consists of a chemical compound of stearic acid and glycerine. It is, in fact, what is called the "glyceride" of stearic acid, and is the hardest of the substances which make up ordinary

Tallow
Test.

Stearine.

fats. Mutton suet, for instance, owes its hardness to the large proportion of true stearin which it contains. Next, there are several **commercial stearines**, such as "lard stearine", "cocoa-nut stearine", "cotton-seed stearine", and "tallow stearine", which are obtained from the various fats or oils by cooling them and pressing out the softer, oily, or "olein" portion. The solid pressed residue is the "stearine" in question. These various stearines contain true **stearin** in considerable quantity, as a rule, but differ from the latter inasmuch as they contain, in addition, a large amount of a somewhat similar substance, **palmitin**. They are, in fact, mixtures of at least two glycerides, stearin and palmitin, and generally contain small quantities of olein as well. Finally, the "**distilled stearine**", and the "**saponified stearine**", which are used in such great quantities in the candle-making industry, are really made up essentially of the two **fatty acids**, stearic acid and palmitic acid, and do not contain true stearin or palmitin at all (or only as accidental admixtures). They are not glycerides; they do not contain glycerine. In fact the two names by which they are known, "distilled" and "saponified", are the names of the processes through which they have been put in order to separate the glycerine. Tallow, palm-oil, bone fat, and "tallow stearine" are the chief raw materials employed. "**Distilled grease stearine**" is obtained from the "recovered grease" of wool factories ("Yorkshire grease").

Under the head of **Waxes** we include the following:—Bees'-wax, Japan wax, Carnaüba or Brazil wax, Chinese wax, other vegetable waxes, Paraffin waxes, and Spermaceti. Of these, Japan ^{Waxes.} wax is a fat, allied chemically to the vegetable oils, being chiefly composed of "glycerides", or combinations of fatty acids and glycerine; paraffin waxes are hydrocarbons; whilst the other waxes are what are called in chemistry "esters", or compounds of fatty acids with alcohols other than glycerine.

Bees'-wax is the substance of the honey-comb. Ordinarily it is yellow in colour, but some foreign varieties may be greenish, reddish, or brown. It is obtained by melting the pressed comb in water, allowing the impurities to settle, and then letting the wax cool or pouring it into moulds. Thus prepared, **Yellow Wax** is a tough solid with granular fracture. It has a pleasant and characteristic smell of honey, and a faint, slightly balsamic taste.

White Wax or Bleached Wax is obtained by mixing a little tallow or turpentine with the yellow variety and exposing it to sunlight and air; or it may be bleached with certain chemicals, such as potassium bichromate and sulphuric acid. The bleached wax is more brittle than the yellow kind; it is free from smell and taste; and its fracture is smooth. Bees'-wax is produced in a number of countries, *e.g.* France, Italy, Turkey, Greece, Egypt, and other parts of North Africa, Mexico, California, and some of the British Colonies, as well as in this country. It invariably contains some pollen-grains of the flowers from which the honey and wax have been collected, and these grains are recognizable under the microscope. The wax is liable to a number of adulterations, among which are water, mineral matters such as gypsum, sulphur, and yellow ochre; starch, flour, and rosin; stearine, Japan wax, tallow, paraffin, and carnaüba wax. Cases have been recorded of factitious bees'-wax composed of 60 per cent of paraffin and 40 of yellow resin, covered with a thin layer of genuine bees'-wax. In addition to its domestic uses for polishing, &c., bees'-wax is also employed in candle-making and in moulding.

Japan Wax is imported in small slabs, chiefly from Japan. It is prepared from the berries of various sumach trees, *e.g.* *Rhus succedanea*, *R. sylvestris*, &c., and as already mentioned, is strictly a fat and not a wax proper. Japan wax is a pale-yellow or straw-coloured substance, which breaks with a splintery, somewhat shiny fracture. It has a bees'-wax-and-tallow kind of odour; and although hard, is of waxy character and can be kneaded between the fingers. It grows yellower with age, and is liable to become covered with a whitish powdery coating. Water and starch have been frequently found as adulterants of Japan wax to the extent of some 15 to 30 per cent. The sumach trees which furnish this vegetable wax are now cultivated in California as well as in China and Japan.

Carnaüba Wax is a very hard, sulphur-yellow or yellowish-green substance, very like stearine in appearance, and brittle enough to be easily powdered. It is a vegetable wax, being exuded from the leaves of *Corypha cerifera*, a tropical palm of South America, and particularly of Brazil. The leaves of the palm are spread in the sun and afterwards shaken, when flakes

of a waxy substance scale off. These flakes, collected and boiled with water, yield the wax. The wax, which has a very high melting-point, is used in candle-making, soap-making, in the compounding of certain wax-varnishes, and as an adulterant of bees'-wax.

Chinese Wax, or Pe-la Wax.—This substance is formed upon the young branches of the wax-tree, *Fraxinus Chinensis*, by an insect, the *Coccus pe-la*. After being scraped from the tree, the crude wax is cleansed from impurities by spreading it on a strainer and immersing it in a cauldron of boiling water. The wax melts and passes through the strainer, leaving the impurities behind. On cooling, the purified wax solidifies, when it is removed from the water, and after drying is fit for the market. Chinese wax has a crystalline structure, and is harder than spermaceti. Its melting-point is about 180° F. In China, candles are sometimes made from this material alone, but more generally it is blended with softer fats, or else used as a coating for waxes or fats which melt at a lower temperature. Occasionally it is coloured with alkanet root.

Of other vegetable waxes it is only necessary to briefly mention **myrtle-wax**, a fat obtained from myrtle-berries and used like bees'-wax; **opium wax**, **palm wax**, and **cotton-seed wax**.

Paraffin Scale is crude paraffin wax obtained from petroleum, bituminous shales, and lignite by distillation. It is separated from the petroleum or paraffin residuum which is left after removal of burning and lubricating oils. In the Scotch shale industry, for example, the crude thick "green oil" is cooled down and pressed: this separates it into a fluid portion ("blue oil"), and a solid residue; this latter is the Paraffin Scale
and Wax. paraffin scale. The scale always contains more or less impurity in the shape of "dirt", water, and soft paraffins termed in the candle-making trade "oil". The fewer of these impurities there are present, the more valuable is the scale; and consequently large buyers generally purchase on the basis of a valuation of the scale according to the amount of impurity. What may be called the standard methods of testing scale in this country have been agreed upon between the Scottish Mineral Oil Association and certain representative purchasers; they include directions for sampling the scale, and for determining the amount of the

water, dirt, and oil. The "setting-point" of the scale is also of importance for distinguishing between "hard" and "soft" varieties; it denotes the temperature at which the sample, after having been melted, begins to solidify again. In the Scotch paraffin industry, scale setting below 118° F. is classed as "soft" scale. Paraffin scale is largely used in the candle-making industry.

Paraffin Wax, when pure, is a white or colourless, translucent, crystalline, tasteless, inodorous solid. It is obtained by the refining of paraffin scale. Several processes are in use for this scale-refining, but it will suffice to briefly outline one of the chief methods. In this the crude scale is first whirled in a centrifugal machine to remove liquid oil, and then pressed to separate softer paraffins. The brown cakes of residual wax are next melted with sulphuric acid, then with soda to neutralize the acid, and once more pressed. In order to remove the dark colouring-matters the cakes are then partly dissolved in naphtha and filtered through animal charcoal. Finally the naphtha is removed by blowing steam through the filtered product, and the purified wax is pressed dry and cast into moulds. Or, in some cases, the crude scale is melted with naphtha straight away, and then cooled down and pressed; this being repeated several times eventually gives "hard" and "soft" paraffin wax, the oil and other impurities being pressed out with the naphtha. Two varieties of paraffin wax—the hard and the soft—are recognized in the trade. The wax, however, may be made of any degree of hardness or softness intermediate between a very soft product melting at about 100° F. on the one hand, and a very hard article melting at 150° F. on the other. It has better illuminating power than any of the other materials used for candle-making, even better than spermaceti; but has one small disadvantage in becoming plastic at a temperature much lower than its melting-point, which means that the candles would have a tendency to bend if made from paraffin wax alone. This tendency, however, is easily overcome by mixing a little bees'-wax or stearin with the material.

Ozokerite or Fossil Wax, which has been extensively used by Field's of Lambeth in candle-making, is allied to paraffin wax, being, like the latter, substantially composed of hydrocarbons. It occurs in various localities in the Tertiary strata, chiefly in or near

the coal measures. The purest and most extensive deposits occur at Drohobyas and Boryslaw in Galicia, and in the island of Tcheleken in the Caspian Sea. Generally it is found as a compact, tough, brown substance, which can be refined into yellow bees'-wax-like "**cerasine**" by treatment with fuming sulphuric acid; or, by distilling it in superheated steam, as is done at Field's works, the crude ozokerite can be separated into refined white **ozokerite**, into a **soft wax**, and into a product "**ozokerine**", resembling vaseline, the residuum being a hard black substance which is used as insulating material in electrical works. "**Neft-gil**" is a mineral very similar to ozokerite, and is also found in the Caspian region.

Spermaceti occurs chiefly in the head-cavities and blubber of the sperm-whale or cachalot. It is contained in the sperm oil, and is separated by filtering the oil through bags, pressing the "bagged sperm" in a hydraulic press, and then refining the cake of crude spermaceti by melting and hot-pressing it, and boiling it with an alkaline lye. Afterwards it is usually cast into blocks for convenience of storing. Spermaceti forms lustrous white translucent masses with a leafy crystalline structure, brittle enough to be powdered, inodorous, and nearly tasteless.

Soaps are our next class. The word "soap" is twice mentioned in the Old Testament, but biblical scholars agree that the original word did not signify soap as we understand it, but "alkali". Homer, in the *Odyssey*, describes a washing expedition (that of Nausicaa), but does not mention soap; whence critics deduce that this article was probably not known in Homer's time, and in fact we have to come down to the first century A.D. for the earliest mention of what was indubitably "soap" in the sense in which we now use the word. Pliny, the writer in question, was acquainted with both hard soap and soft soap. He states that the substance was invented by the Gauls, but was "made in Germany" of very good quality, and that the materials were tallow and ashes. In the excavation of Pompeii, which was destroyed in A.D. 79, a fully-equipped soapery was found, as well as some well-preserved samples of the manufactured article. It is only, however, in comparatively recent times that soap-making has assumed anything like the proportions to which it has now developed. Two French chemists, Leblanc and

Cerasine.

Soap History.

Chevreul, were by their discoveries largely instrumental in securing the great growth of the industry; the former by his discovery of a method of manufacturing soda from salt on the large scale, and the latter by his researches upon the nature of fats. The Leblanc alkali process was specially important, because so long as the soap trade was dependent for its alkali upon the uncertain and limited supplies obtained from barilla and kelp, so long was it impossible to produce soap in such quantities, or at anything like so cheap a rate, as would have allowed of the great modern development of the industry.

Soap is a chemical compound of fatty acids with alkalies. The oils and fats which the soap-maker uses are what are known

Soaps—Hard as “glycerides”, or chemical compounds of fatty acids and Soft. with glycerine; and the art of soap-making consists,

essentially, in “splitting off” this glycerine from the fat and replacing it by the alkali. In the case of hard soaps the glycerine is not merely “split off”, but usually removed altogether; with soft soap the glycerine, though “split off” from its combination, remains mixed with the alkali-soap. This, however, is not the *essential* difference between hard and soft soaps. In hard soap

the alkali is soda; in soft soap it is potash, and this is the essence of the difference. The removal or non-removal of the glycerine is a matter of manufacturing convenience, not of principle. To some degree, however, the consistency of the soap depends also upon the nature of the fat or oil from which it is made. The fatty materials used in soap-making consist of recovered grease from wool-works and other sources, bone grease, horse grease,

Raw Materials. tallow (town tallow, melted stuff, and rough stuff) and tallow oil; various fish-oils, and vegetable oils.

In addition to these, rosin is largely used for soap manufacture. It combines with the alkali to form “rosin soap”, which is, however, not used by itself, but mixed with the true fatty soaps. For soft soaps linseed oil is largely used, and, to a considerable extent also, whale oil and cotton-seed oil. The linseed oil gives a good, pale-coloured, transparent soap of good consistency and tolerably free from objectionable odour. Soaps from whale and other fish oils are usually clear but dark-coloured products with a fishy smell. Cotton-seed oil yields a fairly good soft soap, pale-coloured, transparent, and “figging” better than those from lin-

seed and fish oils, but liable to become more or less rancid on keeping. For hard soaps very various of fatty materials are employed, depending to some extent upon the kind of soap required. Tallow, lard, palm oil, and cocoa-nut oil are largely used for white or curd soap; bone-fat, kitchen stuff, and inferior kinds of tallow for ordinary yellow and mottled soaps; olive and other vegetable oils for Castile varieties; palm oil, almond oil, cocoa-nut oil, castor-oil, lard, and tallow for fancy toilet soaps.

In the manufacture the following is the **process for Hard Soaps**. The fat or oil is first boiled for about two hours with a lye of caustic soda, of which 150 to 200 gallons are generally allowed, according to its strength, for every ton of fat. Soap Manu-
facture. This results in the production of a viscid, pasty mass, in which the fat is largely, but not completely, saponified. The operation is known technically as "killing the goods" or "pasting". Next, a quantity of salt is mixed with the soapy emulsion. This salt dissolves to form a strong brine; and, since soap is insoluble in brine, it separates out and rises to the surface: in this form it is called "grain" soap, and the operation is technically termed "salting out" or "cutting the pan". The object of this salting out is to enable the spent lye, which now contains the glycerine displaced from the fat by the alkali, to be drawn off or pumped away. After this the grain soap is boiled with fresh, strong soda-lye to complete the saponification. The strong lye is drawn off, and the "close" soap again boiled with a little water to remove any remaining alkali, after which the mixture is allowed to partially cool down, and the layer of melted soap is then ladled out into the "frames" or moulds, where in the course of one or two days it solidifies into blocks. The cold blocks of soap are next marked round the sides by means of an iron-toothed "scribe", and then cut along the marks into slabs of the required thickness: these slabs are then again divided into bars, and the bars piled upon one another crosswise to dry. Machinery is, of course, largely used for soap-cutting, &c., in the big soap-producing establishments.

The above is an outline of what may be called the general process for ordinary hard soaps; but there are several more or less important modifications. Thus in one method the saponification

is effected in closed vessels under pressure, whereby it is claimed that a better yield and superior quality of soap are obtained at a smaller cost. In another, the "cold" process, the soap is not boiled at all, but the mixture of fat and alkali is well stirred up until saponification is completed. In both these methods the glycerine is not separated, but left in and incorporated with the soap.

In the **process for Soft Soaps** the oil and lye are simply boiled together gently for some hours, the lye being added in portions, and the operation carried on until the paste becomes clear and transparent, and of the proper consistency. After cooling it is packed into casks for marketing. As already mentioned, potash lye must be used for soft soaps, or else a mixture of potash and soda in which the latter forms not more than one-fifth. From the method of preparation, it will be seen that whatever impurities were present in the materials remain in the soap; the excess of lye is not removed, and in fact soft soaps usually contain a certain amount of free alkali as well as the glycerine.

Some such classification as the following is usually adopted for the various makes of soap:—(1) **Household or Plain Soaps**; including **Curd or White, Yellow, Mottled, Castile, and Marine Soaps**. (2) **Toilet or Fancy Soaps**, including **opaque** varieties such as Windsor, and **transparent** kinds such as glycerine soap and Pears' well-known article. (3) **Pharmaceutical Soaps**, such as carbolic soaps and the *Sapo durus* and *Sapo mollis* of the British Pharmacopœia. (4) **Soft Soaps**. (5) **Manufacturers' or Industrial Soaps**, including such soaps as **Fulling Soap** for woollen-workers, and soap for calico-printing, Turkey-red dyeing, &c. (6) **Miscellaneous varieties**, such as red-oil, silicated, sulphated, sand, and petroleum soaps. We subjoin a few notes upon the more important of these varieties.

In the **Plain Soaps** we have (*a*) **Curd or White Soap**. Tallow alone, or tallow mixed with lard or olive-oil, is the chief fatty material used for this soap. In order to obtain a good coloured product the saponified mixture is boiled with water and allowed to stand in a warm condition for about two days. During this time the impurities of alumina and iron, which are always contained in the lye, and which tend to discolour the soap, settle down into a dark-coloured layer; and the upper

stratum of white soap is then ladled out into the frames to cool. Curd soap is extensively used for cleansing lace, stockings, and woollen goods in the Nottingham and Yorkshire textile industries.

(b) **Yellow Soap.** This usually contains a considerable proportion of rosin; in fact the characteristic colour is due to this ingredient. It is generally made by partly saponifying the commoner kinds of fat, tallow, or palm oil as already described, and then adding the powdered rosin with the final charge of lye. Several other processes have been used: for example, in one method a crude "rosin soap" and a crude tallow soap are prepared separately, and these are then boiled together in proper proportions until a uniform mixture results. Rosin combined with alkali possesses undoubted detergent properties, and its use in soaps is not regarded as an adulteration. Too much, however, tends to make the soap soft and dark-coloured. About one-fourth the weight of the fat is a common proportion for the rosin. The following is a typical analysis of "**primrose soap**" of fairly good quality:—

Fatty anhydrides	...	...	...	46.9 per cent.
Resin	„	...	...	15.4 „
Combined alkali	...	...	...	7.1 „
Free	„	...	...	0.2 „
Other mineral matter	...	...	...	traces
Water	...	...	...	30.4 „
				100.0

True soap-substance, 69.4 per cent.

(c) **Mottled Soaps** are of two kinds, viz. "**artificially**" mottled, in which special colouring-matters are added to produce the mottling; and "**genuine**" mottled, in which the mottled appearance is due to the impurities of the lye. In making the former kind, the colouring-matter—manganese oxide for **gray** mottling, vermillion for **red**, and artificial ultramarine for **blue**—are thoroughly incorporated with the melted soap at the end of the saponification process, just before it is removed to the cooling-frames. For producing the "genuine" mottled product, the dark-coloured soap or "*nigre*" produced by the impurities in the lye (and which is allowed to settle out when white soap is required) is drawn up with a rake to the surface of the soap-paste, and in afterwards percolating downwards through the viscid mass it leaves veins

or marbling which in the cooled soap remain as mottle. Analysis of typical mottled soap:—

Fatty anhydrides	...	...	...	46.6	per cent.
Resin	„	...	...	nil	
Combined alkali	...	...	...	5.2	„
Free	„	...	...	0.8	„
Other mineral matter	...	...	...	2.4	„
Water	...	...	...	45.0	„
				<hr/>	
				100.0	

True soap-substance, 51.8 per cent.

(*d*) **Castile Soap.** This is also known as Marseilles or Venetian soap, and both white and mottled varieties are made. The mottling, in fact, was formerly a characteristic feature of Castile soap; and as this was essentially a good soap, the mottling or marbling came to be looked upon as a sign of excellence. There is this much justification for the idea—“genuine” mottled soaps cannot contain an excessive quantity of water, as good marbling is difficult to obtain if the soap is made too thin before cooling and setting. But mottling is by no means necessarily a sign of superiority in other respects. The cheaper kinds of olive oil, often mixed with cotton-seed, poppy, or other seed oil, are used for making Castile soap, and the process is essentially the same as that already described. Green vitriol (sulphate of iron) is used to produce the marbling of the mottled varieties, though the effect is also due partly to the use of impure lye containing sulphide of iron.

(*e*) **Marine Soap.** This is typically a cocoa-nut oil product, though mixtures with other oils are used. The soap carries a good deal of water, 60 to 70 per cent of this ingredient being often found in the marine soaps. For this reason they are sometimes referred to as “hydrated” soaps. The term “marine” denotes the fact that this kind of soap can be used for washing with salt water, since it is more readily dissolved in dilute brine than are the ordinary soaps.

Next we come to the class of **Toilet Soaps (Fancy Soaps)**. The varieties of these are very numerous, the differences in many cases, however, depending upon variations of scenting and colouring rather than upon essential differences in the soaps themselves. **Opaque Soaps.**—A general process for preparing many of these fancy soaps is as follows:—A good “stock”

soap is taken as the basis; this may be, for example, a white curd, or good yellow "fitted" soap made in the ordinary manner, or one obtained from almond oil or palm oil. The stock soap is sliced up, remelted, and well mixed, then the colouring-matters are incorporated with it, and afterwards, at as late a stage as practicable, the desired perfumes are added. After this the soap is ladled into the "frames", and when cooled and set it is cut into tablets. The edges of these are then trimmed, and the tablets moulded and stamped. "Cold-process" soaps are also largely used for the fancy class; in this case the soap is not remelted, but the perfumes, &c., are added direct to the soap-paste after saponification, and at as late a stage as practicable, in order to avoid loss by evaporation. This method is especially suited for soaps containing the more delicate perfumes, on account of the low temperature at which the operations are conducted. Soaps made by this process retain the glycerine which has been split off from the fat during saponification. Those made from a stock soap may have glycerine added to them during the remelting.

Probably, however, the most important process in use for making the better kinds of fancy soaps is what is known as the French or "milling" method. In this system a good stock soap, usually prepared by the cold process, is Milling
Fancy Soap. cut up by machinery into bands and shavings, and these soap-shavings, mixed with the proper colouring-matters and perfumes, are then passed through a rolling and crushing mill to ensure perfect amalgamation of the mass, which eventually passes from the machine in the form of ribbons. The latter are then compressed into bars, cut into cakes, moulded, and stamped. In this milling method the most delicate perfumes can be mixed with the soap without appreciable loss, since very little heating is required during the operations.

To make "**Transparent**" (**Translucent**) Soaps, one of the chief methods is to dissolve a good yellow stock soap, in the form of dried shavings, in methylated spirit. This is effected in a steam-jacketed still, and about 40 lbs. of the spirit are used for each 100 lbs. of soap. Any carbonated alkali, free fatty matters, gritty material—in fact all non-soap substances except free caustic alkali—are left undissolved by the methylated spirit, and settle out as a deposit from the alcoholic solution of pure soap. About one-fourth

of the spirit is distilled away and recovered for subsequent use, and then the clear residual solution of soap is run out of the still into moulds. Here it sets into bars when cold, and the bars are afterwards cut up into cakes, which are next trimmed, polished, and stamped. At this stage they still contain some spirit, and are not transparent, but on keeping the cakes in the drying-room for some months the alcohol gradually evaporates, the soap takes on a deeper colour, and becomes more and more translucent. Colouring-matters and perfumes, when used, are mixed with the solution of soap in the early stages; for yellow colours tincture of turmeric, annatto, or saffron is used; for red, tincture of alkanet; and for orange, a mixture of the turmeric and alkanet tinctures.

Some "cold process" soaps can be rendered translucent, without dissolving them in spirit, by mixing with them a sufficient proportion of sugar, glycerine, or petroleum. Soap made from castor-oil is a good example of this class.

We append a few notes on some of the chief varieties of
 Various Soaps. soaps included in the two foregoing classes, opaque and transparent.

Almond Soap is made from oil of almonds by saponification of the oil with caustic soda, the cold process being used. For **Bitter-almond** soap, oil of bitter almonds is mixed with a white soap; or, for the cheaper kinds, the artificial oil, nitro-benzene, is employed instead of the natural bitter-almond oil.

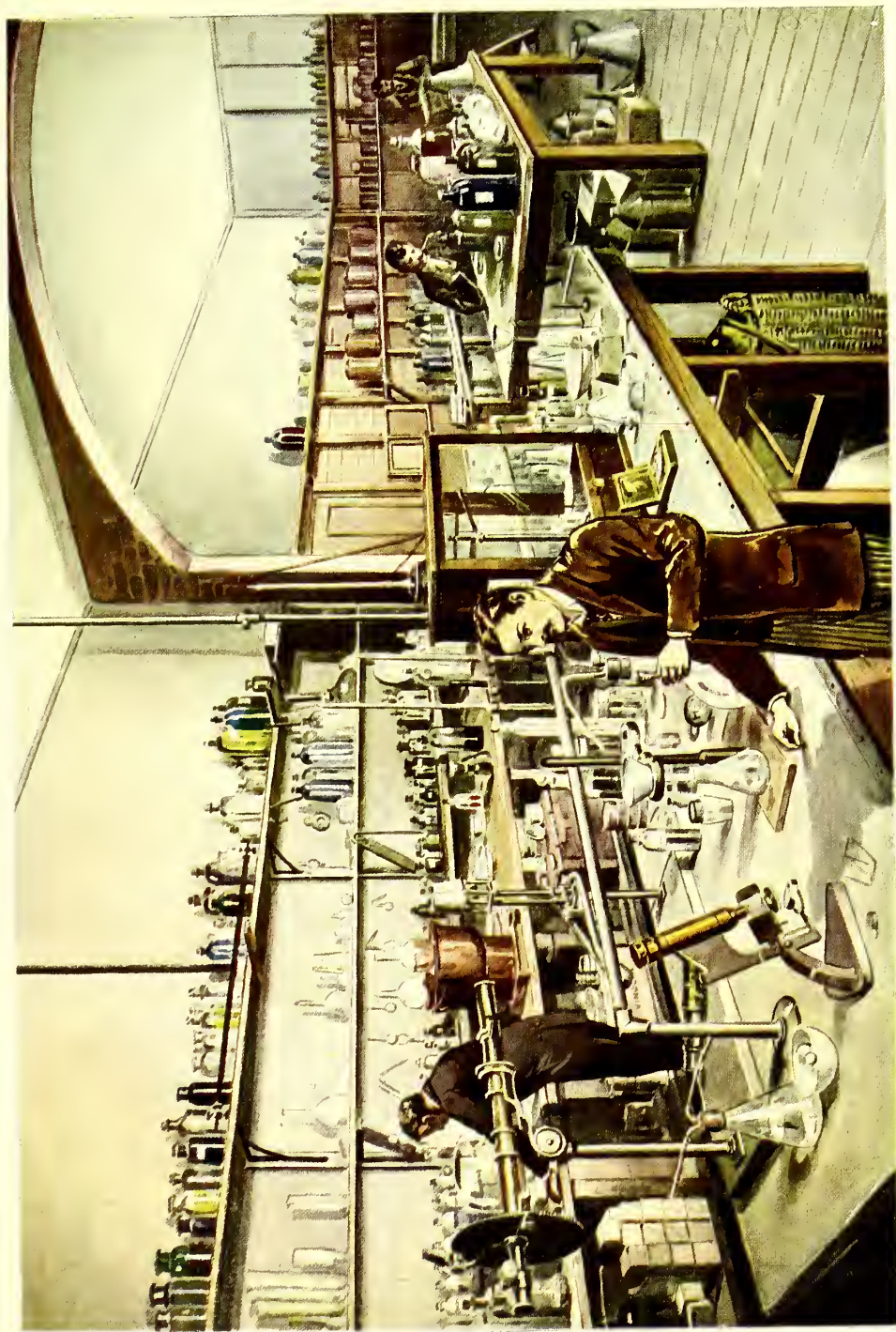
Brown Windsor Soap originally owed its colour to the ageing of the plain white Windsor, but at the present time it is artificially coloured with such substances as ochre, umber, or caramel. **Ordinary plain Windsor** is simply a scented curd soap, the perfuming ingredients being generally caraway oil, with a little bergamot, lavender, or origanum oils. **Best plain Windsor** is made from a mixture of olive-oil and tallow, the scenting constituents being one or more of the following oils and essences: Caraway, bergamot, lavender, origanum, cassia, almonds, rosemary, musk, and ambergris.

Glycerine Soaps may be made by melting any mild soap, mixing it with about 5 per cent of glycerine, and perfuming the mixture with oil of bergamot, or with rose-geranium, cassia oil, and oil of bitter almonds.

Honey Soap should, if made according to the original recipes, contain a good proportion of honey; but the modern commercial

SOAP MANUFACTURE

The large extent to which soap is now handled by grocers is sufficient justification for introducing a view of an up-to-date soap laboratory in the pages of *The Practical Grocer*. The one chosen for illustration is that of the Vinolia Company, Limited, formerly known as Messrs. Blondeau et Cie, a concern which probably uses a larger quantity of the expensive Bulgarian perfume known as attar of roses than any other firm in any country. The plate shows a laboratory in the London works, in which all deliveries of essential oils and other raw materials are carefully tested, and in which experiments are made with a view to the improvement of the products and the invention of new ones.



SOAP MANUFACTURE

The Laboratory at the Vichy Company's Works

article rarely includes any honey at all. The cheaper kinds are made from a neat yellow soap mixed with sodium carbonate or silicate, and perfumed with citronella. A better kind is obtained from a mixture of curd soap, palm-oil soap, and olive oil, scented with verbenæ or rose-geranium. The genuine article was compounded of Castile soap, honey, gum benzoin, and storax.

Rose Soap may be made from a white tallow soap or lard soap as stock, coloured with vermilion, and scented with oils of roses, cloves, cinnamon, bergamot, and neroli.

Sapphire Soap is made by saponifying palm oil and olein with alkali obtained from kelp, and which therefore contains more or less iodine. The soap is milled, and afterwards treated with an ammonia salt to eliminate any free alkali.

The various other fancy soaps, such as **Musk**, **Orange-blossom**, **Tea-rose**, **Violette de Parme**, and so on, are all prepared by one or other of the general processes already described, with suitable modifications of detail. So also are the **Foreign Fancy Soaps**, such as *Savon Althæa*, *Savon Ambre et Musc*, *Bouquet de Violette*, *Delice des Boudoirs*, *Rose Printanière*, and so on.

Amongst the soaps of our third class, **Pharmaceutical Soaps**, some are simply good plain hard or soft soaps which are used for compounding liniments and other preparations. Others contain some special drug or chemical ingredient, mixed with the soap for use in certain affections of the Pharmaceutical and Disinfecting. skin, or as an antiseptic or insecticide. Thus **mercurial soaps** may be made by mixing Castile or Windsor soap with corrosive sublimate, white precipitate, or other compound of mercury. **Camphorated sulphur soap** is made by dissolving camphor in cocoa-nut oil, mixing this with potassium sulphate, and saponifying the mixture with soda-lye. **Iodine soap** contains potassium iodide; and **arsenical soap** is ordinary soap mixed with a little white arsenic, though the amount of arsenic in some samples is said to be infinitesimal.

Of the **disinfecting soaps**, carbolic acid, coal-tar, and terebene or turpentine soaps are the chief kinds. The value of the two first-named as disinfectants depends upon the amount of "tar-acids", chiefly carbolic and cresylic, which they contain. The characteristic "coal-tar" smell which many of these possess is no guide as regards the presence of tar-acids; the smell is due to a

hydrocarbon "**naphthalene**", and does not necessarily indicate the presence of any tar-acids at all. These soaps are made by incorporating with the materials of the plain soap, either the carbolic and cresylic acids themselves, or that portion of the "heavy oil" distilled from coal-tar which contains these acids; and cases have been met with where the oil used has first been almost completely deprived of its tar-acids, so that although the soap smelt strongly of coal-tar, its antiseptic value was practically *nil*. About 5 to 8 per cent of tar-acids is usually contained in good carbolic soaps.

Of the other classes of soaps, **Soft Soap** has been already described. In addition to its use for ordinary domestic purposes **Miscellaneous soft soap** is largely employed in certain manufacturing processes, such as linen-bleaching and woollen scouring. "**Fulling**" soap, for example, is a soft soap used for woollen fabrics; it contains from 40 to 50 per cent of fatty acids, but no rosin, as the latter is detrimental to the fabric. Such soaps usually contain an excess of alkali. **Industrial Soaps** include both soft and hard varieties. Thus, in addition to the "fulling" soap mentioned above as used for woollen materials, a soft potash soap made from linseed oil is much used by silk dyers for boiling off the sericin or gummy matter from plain silk. In Southern Europe, however, a hard soda soap made from oleic acid or olive oil is used for the same purpose. For calico printing and dyeing a good neutral soap, made from tallow, palm or olive oil, is generally used. An **ox-gall soap**, made from cocoa-nut oil and ox-gall by boiling with soda-lye, is used for removing stains generally, and also for scouring textile fabrics. In **Miscellaneous Soaps** mention may be made of **Silicated Soap**, which is a mixture of ordinary soap with water-glass (soluble glass), a silicate of soda obtained by fusing sand or powdered flint with soda. The silicate has some detergent properties, and the mixture is perhaps useful for domestic cleansing; but it is liable to feel gritty, and is therefore not very suitable for a toilet soap. **Sulphated Soaps** are soaps which, being originally of too soft consistency either from the use of a large quantity of rosin or a low-quality fat, have been hardened by admixture with sodium sulphate (glauber salts) or thiosulphate. Neither these nor the silicated soaps are so much used now as formerly. **Sand Soap** is made by "crutching" (*i.e.* mixing) fine sifted sand into

a suitable hard soap before cooling. It is a useful soap for work-people engaged in rough and dirty occupations. “Cold-water Soap” is a term applied to soaps of quite opposite characters. Originally it denoted a soap made from very soft fatty ingredients, but brought to a proper consistency by drying more than usual, so that it then contained a relatively small proportion of water. But heavily-watered soaps are also sometimes called “cold-water” soaps, presumably because they dissolve more easily than they would if they were drier and contained more true soap. To make cold-water soaps lather still more easily carbonate of soda is often mixed with them.

Petroleum Soaps may be merely mixtures of fitted soap with vaseline or similar semi-solid petroleum, compressed into cakes and coloured or scented as usual; or they may be made by mixing the petroleum with the fat before saponification. Either liquid petroleum or the stiffer “jellies” or butter-like vaselines can be used for the petroleum soaps. It has already been mentioned that petroleum can be used to increase the transparency of certain soaps made by the “cold process”.

Analysis of Transparent Soaps (made by the alcohol process):—

				Sugared.	Not Sugared.
Fatty anhydrides	...	...	...	65.6 per cent.	68.1 per cent.
Free fat and resin	...	...	...	3.0 ”	3.2 ”
Combined alkali	...	...	...	7.7 ”	7.6 ”
Free alkali	...	...	...	nil ”	0.1 ”
Sugar	...	...	...	14.0 ”	nil ”
Glycerine	...	...	...	— ”	7.0 ”
Water	...	...	...	9.7 ”	14.0 ”
				100.0	100.0
True soap-substance	...	...	...	73.3 per cent.	75.7 per cent.

On comparing these with the analyses previously given for primrose and mottled soaps it will be seen that the transparent soaps contain more true soap than either of the others.

Candles are an important item in nearly all grocers’ or oilmen’s businesses, and have been so from immemorial times. Wax candles are mentioned as having been used to illuminate Constantinople about the beginning of the fourth century A.D.; and in Saxon times King Alfred’s chaplains were also his chandlers, one of their functions being to make the well-known

About
Candles.

"King Alfred's candles", by the burning of which the day could be marked out into equal portions. "Mould" candles, which many people look upon as quite a modern invention, were really introduced by a fifteenth-century worthy, the Sieur de Brez. Coming down to comparatively recent times we find that Gilbert White, writing towards the close of the eighteenth century in the *Natural History of Selborne*, gives a very interesting description of the method of making rush-lights as practised in Hampshire. Since that time the two great landmarks in the history of candle-manufacture have been, first, the researches of the French chemist Chevreul upon the nature of fats, leading directly to the use of stearic acid and "stearine" in candle-making, and secondly, the production of pure white paraffin-wax from shale oil by James Young in 1854. These two circumstances, together with the use of machinery and other improvements in manufacture, have given us the paraffin candle and the composite candle at less than half the price formerly charged for the tallow dip, and have enabled the poor man to have a brighter light, drawn from a handsomer candle, than was formerly within the reach of the rich.

Classified according to the materials used, candles may be designated as **Composite, Paraffin, Spermin, Stearine, Tallow, and Wax**; the latter, however, being either animal, vegetable, or mineral wax. According to the method of manufacture we have **Dips, Moulded Candles, and Poured Candles** as the three chief varieties, with **Drawn Candles** in the shape of tapers and the small Christmas-tree sizes, and an almost obsolete kind in the form of **Rolled Candles**.

The chief fatty materials used by the candle-maker have already been described under the heads of "Tallow and Stearine" and "Waxes". The wick, however, is of considerable importance, and requires a few words before the actual process of manufacture is dealt with. At one time the only wicks used were made of twisted cotton yarn, still to be seen in tallow dips. But such wicks, standing as they do during the burning in a comparatively cool part of the hollow flame, are not consumed, and snuffers had to be used to remove the charred and glowing end. What was wanted was some device for bringing the end of the wick automatically to the edge of the flame, where,

with a full supply of oxygen from the air, it would be consumed as the candle burnt. Several expedients were devised to effect this, of which "Palmer's metallic wick" will serve as an illustration: this wick included a fine thread coated with metallic bismuth, and when ignited, the easily fusible metal formed a globule at the end of the cotton, which by its weight bent the wick out of the flame into the air, the bismuth itself being then volatilized. Eventually, however, all such precautions were rendered unnecessary by a very simple device. This was the use of a "braided" or "plaited" wick, which from its flat form naturally had a tendency to curve over when burning. All except tallow candles and some wax varieties are now provided with such wicks. Before using, the wicks are "pickled" for a day in certain chemical solutions, of which borax, nitre, sal ammoniac, potassium chloride and chlorate, and phosphorus compounds are the chief, though almost every manufacturer has his own special recipe. The object of this pickling is to prevent the "ashing" and "smoking", to which the raw wick is prone, by saturating it with a counteracting chemical. The pickled wick is then dried, first in a centrifugal machine, and then in a warm cupboard; after which it is wound on spools ready for the candle-machine.

Mould Candles form the chief variety now made. A modern candle-moulding machine is a complicated piece of mechanism, but its principles may readily be understood. A number of moulds, butt-ends uppermost, fit at these upper ends into a trough into which the melted paraffin or stearine is poured. In the lower part of each mould there works a piston, the top of which is hollowed out in cone shape to form the tip of the candle. The pistons are perforated throughout their length with a small hole through which the wick passes; and the wick itself is supplied from a spool, one of which lies below each piston. The wick being drawn up through the perforated piston and through the centre of the mould, the molten paraffin or stearine is poured into the trough which feeds the moulds, so as to fill the latter. When sufficiently set, the candles are driven upwards out of the moulds by means of the pistons, which are worked by a lever; then the pistons are lowered again and a new lot of melted material poured into the trough for a second batch of candles; and so on. The moulds are jacketed with a bath of water which can be heated to

any required temperature by means of steam, for the candle-material, especially stearine, is liable to crack if chilled too suddenly.

Poured Candles are chiefly the wax articles. Wax is not well adapted for moulding, as it has a great tendency to stick to the mould, and contracts a good deal on cooling. The wicks, which are often of twisted instead of plaited cotton, are hung on a hoop over the cauldron of melted wax. Turning the hoop round, the operator "bastes" each wick in turn with a ladleful of the molten material. After a few pourings, the hoops are hung in a current of air to cool, and the wicks are then again coated with the wax. When sufficiently thick, the candles are placed on a smooth marble slab. The workman then rolls them to and fro under a board, by which means the irregularities are smoothed away, and the candle, if skilfully rolled, assumes the evenness of outline of the moulded article. The ends of the candles are now cut clean with a sharp knife, and their tips shaped with the finger and a small strip of wood. **Church Candles**, and to a smaller extent carriage candles, are the chief articles made by the pouring process. Formerly the larger sizes of church candles were made by kneading warm, plastic wax round a wick, and smoothing it off under a rolling-pin. These were the "**Rolled Candles**", but the method is now practically obsolete.

Dipped Candles represent the older and more generally-used method of making tallow dips. The wicks are hung side by side from a rod or "broach", and several of such rods are placed on a frame which can be raised or lowered at will. Underneath the frame is a lead-lined trough with the hot tallow, into which the wicks are dipped by lowering the frame. After the first dipping the frame is moved aside for the wicks to drain and cool, fresh frames being dipped in the meantime; then subsequent dippings are given until the candles are of the requisite thickness and weight. If the lower ends eventually become too thick and bulgy, they are kept for a short time in the hot tallow to melt off the excess. A newer method used at some large factories is to dip steel skewers in the molten fat, and form the candles round these skewers instead of round the wicks. When cold, the metal cores can be withdrawn, and the specially-prepared wick is then pulled through the hole thus left in the candle. This

method is claimed to be more economical than the older one, preventing as it does a certain waste of wick.

Drawn Candles and Tapers, as well as the stems of wax matches, are made in long lengths and afterwards cut to the desired size. The wick is wound on one drum, and unwound from this drum to another, passing meanwhile through a pan of molten wax and stearine placed between the two drums. By thus winding the wick backwards and forwards it can be coated with the wax until thick enough to form the small candles that are used on Christmas-trees; but when thicker, the wax becomes liable to break. The required size and uniformity are given by passing the coated wick through a circular eye as it emerges from the melting-pan. **Night-lights** were formerly made of wax and spermaceti, but cocoa-nut oil and palmitic acid or some variety of stearine are now generally employed. Those containing a large quantity of palmitic acid are harder than the others, and consequently do not require an external casing of cardboard or glass. This kind is made by running the melted fat into a mould, which turns out the night-light ready punctured for the wick, the latter being subsequently inserted by hand. In the other kind of night-light the wick is attached to a “**sustainer**” or small square of tinfoil, and kept in the middle of the casing by means of a drop of wax. The cases are then filled by pouring in the melted material.

Coloured Candles are sometimes dyed with an aniline dye, but other colouring-matters are also used. For **yellows**, chrome yellow and gamboge; for **reds**, carmine, alkanet, and vermillion; for **blues**, indigo, Prussian blue, ultramarine, and copper sulphate; and for neutral tints, ochres and oxides of iron are employed. **Black** candles are prepared by mixing the fruit of **anacardium** with the fatty material, or by the use of an aniline black. **Painted** candles are first varnished over with a mastic or dammar varnish, and the design afterwards painted on by hand or otherwise. **Cable** and **Fluted** or **Spiral** candles may be either turned in a lathe from ordinary moulded candles, or else cast in rifled moulds and screwed out after cooling. **Perfumes** are mixed with the material in some varieties of ornamental candles.

Commercial Varieties of Candles.—Some such classification as the following is adopted by large houses in dealing with candles:—

Carriage Candles, generally of wax, ozokerite, &c.; **Chamber**, including sperm, composite, and stearine makes; **Christmas-tree**, transparent, coloured, cable, &c.; **Church**, of wax or vegetable wax, and of long, medium, and short sizes in the various numbers; **Coloured** or **Ornamental**, including hand-painted, perfumed, cable, fluted, and similar kinds; **Composite**, including various "household" brands; **Dips**, **Paraffins**, **Piano**, **Sperms**, and **Wax**, together with special makes such as **Ozokerite**, **Palmitine**, **Dripless**, and **Petro-stearine**. Note that as a rule candles are sold by the box at nominal weights.

6. BRUSHES AND PAINTS

Brooms and **Brushes** form part of the stock of most general shops kept by grocers and oilmen, and it is unnecessary to say that there is a great variety of either. An ordinary Brooms and Brushes. wholesale list enumerates:—Broom heads, from "all fibre" at 3s. 3d. a dozen to "all hair, gray middle, white edges" at 71s.; Belgian broom heads, 80 knots in boxes at 25s.; cocoa broom heads at 3s. 9d. a dozen; Dutch brooms, with and without handles; bass heads, banister brooms, store brushes, black-lead brushes, shoe brushes, hair brushes, scrubbing brushes, spoke brushes, whisk-dandy brushes, lamp brushes and mops, jug mops, bottle brushes, feather dusters, clothes brushes, hat brushes, nail brushes, tooth brushes, plate brushes, crumb brushes, dusters or sweeps, body brushes, saucepan brushes, water brushes, sink brushes, paint brushes, German sash-tools, fitches, enamel brushes, English sash-tools, and so on. To say nothing of mops, kneeling-mats, and so on.

Brooms acquired their name from the broom plant, of which they were commonly made in former days; although ling or heath makes a better besom, and the "besom" as now generally known is of birch. The name "bass" in the word "bass-broom" is often supposed to be derived from the bass-wood or American linden-tree, from the inner bark of which a matting is made. But the material now universally called bass, and used for the bass-broom, is the brown vegetable fibre "piassava", which comes from Brazil. Piassava used to come to England from

South America as packing between casks of sugar or packages of other goods in the holds of the ships; after serving this purpose it was cast aside as waste. In the middle of the last century the idea occurred to the late Mr. Arthur Robottom, a Mincing Lane *habitué*, that this waste fibre might be used for making brooms. Brush manufacturers to whom he introduced it for the purpose found it answer very well, and the public soon responded. Mr. Robottom journeyed to the forests of Brazil to arrange for shipments of the fibre. Landing at Bahia, he proceeded about 240 miles inland, and found the natives who gathered the piassava living in the roughest of huts and existing chiefly upon the bulbous roots of the mandioca plant. Mr. Robottom lived with the natives in their huts for some weeks, and tried to teach them to cultivate the palm-tree, the beard of the leaf of which supplies the fibre called piassava. The industry became a growing one, and the natives came down to the port of Bahia with large quantities of it. They did not in the early days of the industry exchange it for money, but for ale. Not being able to speak English, they brought their loads of piassava down to the ships in the port, and asked for "Bass" in exchange. The natives grew to like the bitter beer, and continually asked for "Bass". Hence, it is said, the brown fibre came to be known as "bass". In consequence of being so largely used piassava is now becoming scarce in Brazil, for as much as 11,000 tons of it have been exported in a year. Large quantities of similar fibres are also shipped to this country from the west coast of Africa. Sorghum stalks are another vegetable raw material for brooms and brushes; so also are the leaf stalks of the African bamboo palm, and the fibre of the American agave. The wine palm of tropical Africa yields "Lagos bass", and the Palmyra palm of Ceylon and India yet another substitute, while Madagascar supplies a useful fibre. Esparto grass, Kitool fibre, &c., are others. Usually fibres have to be steeped in hot water or steamed to render them supple and less brittle. The absence of "spring" is one of the means of detecting the admixture of the vegetable fibre with the animal bristles, which for most purposes in brush-making are better but dearer. If a bunch of bristles is bent between thumb and finger it will spring at once into shape again as soon as released from the pressure, whilst fibre will remain bent or broken.

Fibre 2.
Bristle.

Bristles—the stiff hairs from the hog's back—vary in colour from the “lily” white used for tooth brushes to the brittle black Chinese bristles used for clothes brushes. As being tougher, and therefore lasting longer, Russian, German, and French bristles are preferred to the Chinese, the Russian Okatka bristle being regarded as best of all for such articles as hair brushes. Horse-hair, cow-hair, &c., are also used, and are preferred by Jews and Mahomedans, who regard the pig as unclean. Very frequently bristles and fibre are mixed or used in combination. They may be distinguished by the spring test mentioned above, or by taking a single specimen and applying a light to it; if fibre it will burn without smell and leave an ash, if bristle it will burn with a smell and leave no ash.

The **manufacture of brushes**, it is hardly necessary to say, is now to a very large extent carried on by machinery, but hand-made are usually preferred. The mode of affixing the hair or fibre to the wooden or other stock depends on the use to which the brush is to be put. In making **hair brushes**, the first process is to cut the wood blocks or stocks, which are shaped by revolving saws and cutters. Next the holes are bored, machinery of accuracy being employed for this process, as the appearance of the finished brush depends a good deal on the regularity of the bristles. The stock is next fixed in a vice, and a loop of fine strong wire or thread is inserted in each hole. In this loop a tuft of bristles or fibre is inserted half-way; the loop is then drawn up tightly, and the bunch of bristles, doubled up, is thus drawn into a hole and fixed. After the rows of bristles have been thus inserted they are trimmed. A back is then affixed to the stock by means of glue or small screws; and trimming, papering, and polishing complete the brush.

For **brooms and dusting brushes** the stock is bored with holes which do not go completely through. It is then placed in a vice and held while the brush-maker inserts in each hole a knot of bristle or fibre. This he does by taking up a bunch of hair or fibre, dipping it in boiling pitch, binding it with a little strong thread, again dipping the bunch in the pitch, and then deftly inserting it in the hole; the process being continued hole by hole. In brushes for painters and paper-hangers fine wire or string is tightly wound round the heads to prevent the bristles becoming

GROCERS' HALL—THE GRAND STAIRCASE

The Halls of the chief London City Companies are worthy of their affluence, and the important civic functions for which from time to time they are used. In the Grocers' Hall of revolutionary times—of course not the present building—Parliament was accustomed to meet as a Grand Committee of Safety. Thus, on the 8th April, 1644, it is recorded that both Houses adjourned to meet at Grocers' Hall next day in Grand Committee to "hasten business for the advance of the armies". The "Great Commoner", the Right Hon. William Pitt, was a central figure at one of the notable gatherings in Grocers' Hall, on the occasion when he became a "Grocer". Having been established in 1345 the Company has had an existence of between five and six centuries. It may be mentioned that in the earlier times one of the appendages of the Hall was an Armoury, regularly supplied with weapons offensive and defensive, which seems to have been resorted to by the City authorities whenever tumult arose or was apprehended.



GROCERS' HALL, LONDON—The Staircase

Sandell Co.

loose. In brushes "English made" is in most cases a passport to best prices; and a good name or trade-mark on a brush carries value. With many brushes glue is used instead of pitch for fastening the bristles in the stocks. With others a solid block of wood is used for the stock, and holes having been drilled into it, the knots of fibre or bristle are punched in individually, each being held in position in its hole by a small piece of steel wire, the ends of which are forced into the sides of the hole by the punch. Cement is also used. Varnish brushes are usually set in glue and made with metal bindings, which are sometimes riveted to prevent the bristles moving out of position.

For displaying long-handled brooms and brushes in the shop a stand will be found convenient; or they may be shown with all sorts and sizes of other brushes in a special glass show-case, sloped so as to show them without trouble to the customer, the largest exhibits being at the back and the smaller in front. Such a covered case is worth its cost in preventing goods getting shop-soiled by dust and handling.

In these days of "multiple shops" and departmental stores, even the single shop-keeper must endeavour to meet the requirements of his customers in regard to articles which used to be thought outside the limits of an ordinary grocery trade; and there are few such "lines" outside the ordinary trade which are so profitable, and at the same time appeal to the customers with so much force, as a stock of brooms and brushes. It is a pretty safe inference, that a customer having to go to a brush shop specially will put off going as long as possible, whereas the sight of just what she requires marked up at her grocer's will be a strong inducement to buy from him; and then if the grocer will mark what follows it is probable he will have secured her permanent custom for brushes. But to ensure this he must religiously avoid all shams. Nothing is easier to sell than a sham brush, and nothing will more infallibly get rid of the customer. Although the grocer will find customers saying "I can buy bigger and better brushes than yours", he may as a rule assume with truth that the apparently larger and better-made articles are either all fibre or a mixture of fibre and hair; and although he may miss one sale occasionally, he will find if he buys nothing but the genuine article himself, that when he has made one sale he will make

Stocking and
Selling.

repeat sales. It is difficult to advise on the class of brush a shop-keeper should buy, so much depends on the neighbourhood and class of trade, but our advice would be, that in commencing the broom and brush trade, only the commoner and most useful articles should at first be stocked. Toy and fancy brushes deteriorate in appearance, and even change their fashion; but ordinary hair brooms, baluster (banister) or hand brushes, bass brooms, and black-lead brushes are used by all classes, and are fairly safe to handle.

The writer of this chapter knows of a very fine business that has been built up in these articles, and one or two others of a like nature, from the simple fact that the business was commenced in a growing suburban neighbourhood. New tenants were in the habit of ordering bits of groceries for their servants or charwomen who would be cleaning down the new premises, and it often occurred that a customer would say, "Could you get me a bucket, a scrubber, and a floor-cloth, and send them along with the goods?" The grocer procured these articles by paying an exorbitant price to the old-fashioned brush-dealer and sundryman; but it was not in human nature that this should continue. He therefore decided to stock a few of these articles, and, as we have indicated, with very good results, the range of goods now dealt with by the firm in question comprising three or four hundred varieties, among which are shoe brushes, laundry brushes, flue brushes, plate brushes, saucepan brushes, clothes brushes, hat brushes, hair brushes, tooth brushes, nail brushes, stable brushes, and many others.

The profit on these articles, even if bought at second-hand from a smart, up-to-date, wholesale warehouse, is very good, ranging from 15 to 33 $\frac{1}{3}$ per cent. In some cases a good line will yield a profit of even 50 per cent; but to set against an article of this kind, it will be found policy at times to run a good line yielding 15 per cent only. For instance, if we assume that a selection of brushes is being bought in half dozens, it may be policy to buy a gross, or up to five gross, of a good line of scrubbers to make a show with, and to emphasize the fact that brushes are kept, and in that case, of course, they should be quoted at a reasonably low price.

It is well to ticket or mark every brush with the price it is to be sold at. If your customer, while waiting to be served, happens

to handle one of the brushes and sees the price marked on it, the possibility is she may choose one and buy it there and then. If on the other hand she simply sees the brush and no price, the very strong probability is she may forget to ask the price and leave the shop without making a purchase.

The **treatment of brushes** by the customer is a point that deserves notice, and "a word in season" to the customer himself or herself may often prevent the retailer being blamed for what is no fault of his. For instance, when brushes have to be washed they should be dried quickly, not left in water, or the bristles may be spoilt and the glue or cement melted. **Paint brushes** of all kinds should be cleaned in turpentine or soap and water, not with hot water or alkaline solutions. Nor should they be kept in turpentine or water, as this tends to twist and rot the bristles. They should be kept in cool, dry air, and always well dried after use. **Whitewash**, lime, or distemper brushes, whether new or old, should always be soaked well in clean water for an hour before being used; the water should cover every part of the bristle and the lower part of the stock. Impress on the customer that this is necessary, because after being stored or used bristles and stock tend to shrink, causing the fastenings to become loose. Before soaking, any bristles which may have slipped above or below the wire or leather binding should be restored carefully to their original position. All-bristle brushes should not be used in hot or fresh-slaked lime, or they will be curled and burned and will lose their spring; for lime-washing the common quality or fibre brushes are more suitable. Sash-tools or ground brushes should not be used in varnish or as dusters, or the bristles will become loose. Before use they should be soaked for a short time; and if the handles become dry or loose, opening the bristles and pouring a little water on the thick end of the handle will put this right. Varnish brushes should never be put in water, it destroys the cement; they are best preserved by being kept in the varnish itself. **Glue brushes** after use should not be left in the glue-pot, but taken out and rinsed in water. Stippling brushes after use should be washed with soap and water, rinsed, and beaten on a dry cloth; but do not wet the wood. Grainers' tools should be kept perfectly dry, or the bristles may decay from mildew.

Finally, note that to keep paint brushes in turps injures and hardens the bristles.

Paints are colours or pigments ground with oil to the consistency of paste, and ready to be thinned for brush use by the further admixture of oil or turpentine. On a large scale the grinding-up is done in a mill; a retailer may do it for himself with a small paint-mill, or a small quantity can be ground with oil by the use of a stone and muller. The practical painter will usually buy his paints stiff and do his own mixing. If the retailer tries the work for himself he will do well to remember

Paints and
Paint-mixing. that some of the pigments are poisonous, and that great care is necessary in handling them. Ready-mixed paints in tins are now so well put up and so popular that they are found in the stock of many retailers who would never trouble to mix such paints for themselves, and would not "handle" the goods at all if this were indispensable. At the same time it goes without saying that the paints so mixed by the retailer may show the better profit. The poisonous paints include king's yellow or orpiment, verdigris (both strong poisons), white-lead, red-lead, chrome yellow, Scheele's green, and vermilion, none of which can be safely ground with the slab and muller, but should be triturated in a colour-mill.

Of ordinary paints white-lead is most frequently used as the basis, mineral or vegetable colouring-matters (but for house-paints usually metallic oxides) being mixed with it in a "vehicle" of linseed oil. White-lead causes disease to those who handle it much, and white-zinc is sometimes used in its place as being less dangerous to the painter's health; but this also is said to produce nausea, while it is far from being equal to white-lead as a paint basis, owing to the fact that the carbonate of lead combines with the oil, while the zinc is only suspended in it. Another point which has to be borne in mind in mixing paints, is that white-lead is amenable to the action of sulphur; consequently paints which contain sulphur, such as cadmium yellow and ultramarine, cannot be used with it, or the lead sulphide which would be formed thereby would discolour the paint. All pigments containing lead, arsenic, copper, mercury, cyanogen, or chromic acid are poisonous.

White-lead is a carbonate of lead manufactured by various

processes, such as those of the "stack", the "chamber", and precipitation. In the old Dutch process sheets of lead are stacked with layers of tan, or acted upon by vinegar until corroded and encrusted with the coating of **White-lead.** In the chamber process the lead is placed on racks in a closed chamber in which currents of vapour and fumes from acetic acid and carbonic acid act upon it and produce the white-lead. In the dry precipitating process litharge is converted into white-lead; there is also a process by which litharge is dissolved in a hot ammoniacal solution of Rochelle salt (double tartrate of sodium and potassium) and carbonic acid then passed into the solution, whereupon white-lead is precipitated. Pattinson's white-lead is an oxychloride of lead, and there are various patent "white-leads" which consist of sulphate of lead, barytes, or even zinc oxide without lead at all. If white-lead is rubbed on coarse paper and the paper folded and burned, holding it over a plate, bright grains of lead will fall on the plate; these will be yellowish and flat if the article is of inferior quality. In 1896 the leading British white-lead manufacturers agreed to discontinue the use of the term "best" as a trade description for admixtures of white-lead; to brand all packages containing white-lead admixtures with the word "Reduced"; and to invoice all white-lead admixtures as "Reduced white-lead". The analysis of a good white-lead shows: lead carbonate, 68.95 per cent; lead hydroxide, 31.05 per cent. **White-zinc**, or **Chinese White**, is produced by the oxidation of zinc, whilst the sulphide of zinc gives "Charlton white" or "zinc-white". Chinese white takes up much more linseed-oil than does white-lead when ground up for painting purposes. The best white-lead takes up least oil and has least action on the oil, so that it is best to use.

An ordinary **White Paint** is made by mixing 28 lbs. white-lead, 6 pints linseed oil, 2 pints turpentine, and 1 lb. litharge, or similar proportions. In **Black pigments**, ivory-black, lamp-black, and bone-black are much used. **Ivory-black** is, properly, the charcoal produced by burning ivory, but is sometimes counterfeited by powdering the charcoal of hard woods. **Charcoal** and **Tar** are obtained when wood, roots, &c., are subjected to what is called destructive distillation—which means, roughly speaking, being burnt without flame under cover so that the air is ex-

cluded. The slow burning of bones gives **Bone-black**; whilst **Lamp-black**, which once meant the soot of lamps, is got by slowly burning resinous refuse, pitch, coal-tar, &c., and collecting the sooty deposit of the black smoke by placing a piece of gauze or cloth in the chimney. **Brunswick Black** is made by mixing asphaltum or black pitch, or both, with boiled linseed oil, and stirring in turps to thin. Powdered **anthracite** has been used for black paint.

Prussian Blue, which is now prepared with sulphuric acid from copperas and yellow prussiate of potash, is a colouring-matter of a pure dark-blue colour, sometimes with a bronze lustre, **Blues**.

sometimes dull; inodorous and insipid; insoluble in water, alcohol, or ether; decomposed by caustic alkalies. It was discovered accidentally in 1704 by Diesbach, a colour manufacturer. Indigo, ultramarine, cobalt, and smalt are other blues. **Indigo** was until recently a purely vegetable colour, but is now largely made in Germany and elsewhere by a synthetic chemical process. The true indigo is derived from the leaves of several species of plants grown in the East and West Indies, Mexico, Brazil, Egypt, &c. Woad, used by the ancient Britons, was a colour of the same nature, but indigo is chiefly obtained from the tropical plants of the genus *Indigofera*, with their small blue, purple, or white pea-shaped flowers. Most of the vegetable indigo comes from India, especially Bengal, Oude, and Madras, where the *Indigofera tinctoria*, *anil*, *disperma*, and *pseudo-tinctoria* are specially grown in a light mouldy soil. The finest indigo comes from Bengal, and is in cubical pieces, light, brittle, of a clean fracture, soft to the touch, porous, and a fine bright colour; when rubbed with any hard substance it looks copper-red; it does not readily leave a blue mark when drawn across a white surface. Indigo is chiefly used in dyeing, but also enters into the painter's colours, being mixed with lamp-black for silver-gray, and with yellow-pink and whiting or white-lead for **distemper**. **Ultramarine**, which is regarded as the purest of blues, is in its genuine state a very costly colour prepared from the mineral lapis-lazuli; for house-painter's use, the artificial ultramarine made in France, Germany, and England is used. It is a compound of silicate of alumina and silicate of soda with sulphuret of sodium, which produces a blue colour by reacting upon the other two constituents. **Cobalt** or **Smalt Blue** is a fine colour manufactured by grinding the smalt

glass or oxide of the metal cobalt, found in Saxony and Sweden. The *New Popular Encyclopædia* says:—"Smalt, or powder blue, is made by melting three parts of fine white sand, or of calcined flints, with two of purified pearl-ash and one of cobalt ore previously calcined, and ladling it out of the pots into a vessel of cold water; after which the dark-blue glass, or 'zaffer', is ground, washed, and distributed into different shades of colours, which shades are occasioned by the different qualities of the ore, and the coarser or finer grinding of the powder. Smalt, besides being used to stain glass and pottery, is often substituted in painting for ultramarine blue, and is likewise employed to give to paper and linen a bluish tinge. The chloride of cobalt is well known as a **Sympathetic Ink**. When diluted with water so as to form a pale pink solution, and then employed as ink, the letters which are invisible in the cold become blue if gently heated. It is prepared by dissolving precipitated oxide of cobalt in hydrochloric acid with the aid of heat and diluting with water."

In **Green Paints** the chief colouring materials employed are compounds of copper and chromium, different shades being produced by mixture. **Bremen Green**, or **Verditer**, consists mainly of a basic carbonate of copper. **Verdigris** is a basic acetate of copper which forms on the surface of copper plates when exposed to the action of vinegar or pyroligneous acid. **Brunswick Green** is a hydrated oxychloride of copper; but the name is now generally applied to a mixture of Prussian blue, chrome yellow, and barytes. **Scheele's Green** is arsenite of copper; and arsenic and copper are also contained in **Schweinfurth Green**, **Veronese Green**, and **Vienna Green**. **English Green** is a mixture of Scheele's green with gypsum. **Chrome** and **Emerald Green** are oxide of chromium. So also is **Guignet's Green**. **Hungary Green** is a kind of malachite found in Hungary. **Saxony Green** is an indigo colour. **Rinman's Green** is got by heating zinc oxide with a cobalt compound.

Yellow, **Brown**, and **Black Paints** are produced by the various forms of the oxides of iron; whilst copper in its oxides and compounds with arsenic and other chemical elements gives brilliant greens and blues.

Yellows and
Browns.

The **Ochres**, such as yellow ochre, Oxford, Roman, stone, brown, orange, puce, purple, and others, are oxides of iron,

as are also "Jaune de Mars" and Indian-red. **Strontian Yellow** is chromate of strontian; **Cadmium Yellow**, sulphuret of cadmium; **Palladium Red**, ammonio-perchloride of palladium; **Chromium Green**, sesqui-oxide of chromium; **Terre-verte**, silicate of protoxide of iron; **Amber**, an iron ore with manganese.

The **Lake Colours** have chemically tin or alum for their basis, and owe their tint to animal or vegetable colouring-substances. The red lakes are prepared from madder (**Turkey-red**), cochineal, and Brazil wood; the yellow from fustic, weld, &c.; the brown (**Vandyke**, **Cappagh**, **Rubens**, **Cassel**, and **Cologne browns**) from various decomposed vegetable matters mixed with bituminous matter. Burnt vine-twigs yield **Blue-black**; whilst **Ivory-black** is burnt ivory. Cinnabar is the natural **Vermilion**, found in Spain and elsewhere, but has been superseded by the artificial vermilion, the best of which comes from China. Chemically vermilion is commonly bisulphuret of mercury. In Holland mercury and sulphur are heated till they form a black sulphide, and further heat changes this to red. "Derby-red", "red chrome", "scarlet chrome" are shades of the colours produced from chromate of lead, which also gives primrose, lemon, and orange yellows. Their price depends on that of lead, although the lighter shades are produced by adding sometimes a white base cheaper than lead sulphate, such as barytes.

Large quantities of **Coal-tar Colours**, anilines, alizarines, &c., are now produced for dyeing and other purposes; but as a rule oil colours brightened with anilines will not stand constant exposure to air and water. The **Ochres** come from Holland, Cornwall, Anglesea, Oxford, and many other places, but perhaps mainly from France—Vaucluse. Around Apt, in Vaucluse, which is the centre of ochre production, the country is dotted with hills of alluvial clay, all more or less rich in ore. Sometimes shafts are sunk, with radiating tunnels to reach the ochre, sometimes it is quarried. The clay is carted to the valley below, and there washed; it is flooded with water and the ochre falls into settling-basins. By means of a succession of basins various degrees of fineness are secured. At the end of winter the tanks, or basins, are filled with pure ochre in the form of heavy mud, which, when sufficiently dried as the hot weather advances, is cut into bricks of regular size and completely dried in the sun. Sometimes the

mineral is shipped in bricks, but more often it is crushed into powder. The main difficulty is to secure uniformity in shade, as the deposits are of an infinite variety of colours, from dark-red to yellow or gold, but the market value declines as red asserts itself. A very fine golden-brown ochre is obtained from Italy (Italian ochre or rouge), but the best colour is rare. A large variety of colours is produced at Wick, in Gloucestershire.

For making tints upon a white-lead base by adding pigments, the *Ironmonger* recommends the following process:—"Have ready two absolutely clean vessels. Into one of them pour some raw linseed oil and twist it round so that the sides of the vessel are well oiled before the white-lead is put in. Add then as much stiff white-lead as is required for the quantity of the paint to be prepared, and beat it up well with the oil until a smooth and fairly-stiff paste is made; then put in patent dryers—say, 5 per cent of the bulk of the lead. This must be well amalgamated. Raw oil may now be added until the resultant mixture is fairly liquid, but not too thin, and then the staining colours must be put in, but these must all be ground first in oil or they will not stain. When the required tint is obtained, the consistency of the mass must be reduced with spirits of turpentine until the whole is like a thin cream, when it can be strained through a gauze-wire sieve into the other clean vessel, and is ready for use. A little practice is required to obtain exact shades and to get accustomed to the quantities needed. These it is impossible to specify, because the staining powers of pigments vary so much. A stick called a spatula, round at the handle and bat-shaped at the other end, is the best implement for mixing purposes. Turpentine added to the stiff white-lead will enable the mixing to proceed more rapidly, and some painters of an indolent disposition adopt this method, but the results are not so satisfactory. Turpentine as a thinner should always be added after all the oil has been put in. It should also be remembered that boiled oil and raw oil do not amalgamate well by themselves when cold; under the influence of heat they will combine, and turpentine also helps to bring them together. For all exterior paint-work boiled oil should be used in preference to raw, as the weather has less destructive effect upon it; and when the colours to be employed dry badly, boiled oil may also be used with advantage. Note

Making
Tints.

that dry colours, *i.e.* colours in powder, must never be put into the mixing-can. If your colours are not already ground in oil or turps they must be put upon a slab and well amalgamated with one or other of these media, and this can only be done with colours that have been thoroughly levigated and are in the finest possible powder. Many of the ordinary pigments sold as painters' dry colours are difficult to mix unless the retailer possesses a small paint-mill in which he can grind them with linseed oil into a paste. When not properly ground and mixed they cause the paint to work unevenly and in streaks."

In **combining pigments** for producing new colours there is ample latitude for taste. The man of science resolves light into a spectrum of colours, and of these he tells us that certain colours are "primary", namely (as commonly accepted) red, yellow, and blue, while all other colours can be produced by mixing these in various proportions. Thus red and yellow produce orange, blue and yellow produce green, and so on. The oil-and-colour man, however, has to deal with earths instead of rays of light, and the above extract explains how he goes to work. In whites he starts with his white-lead for opaque; for a pure white he combines one part by weight of white-lead with two parts by weight of oxide of zinc; whilst equal weights of the two give him a silver-white. For black he uses lamp-black. In reds he has light English vermilion for scarlet, makes it rich by adding a fourth as much of orange-mineral, produces light-pink by white-lead and a twenty-fourth part added to it of English vermilion, light-red by mixing equal parts of red-lead and Venetian-red, and opaque-pink by one part of red-lead added to thirty-two of white-lead. In yellows a canary tint is made by adding one part of lemon-chrome to eighty parts of white-lead; sulphur-yellow, equal parts of white-lead and lemon-chrome; buff, white-lead and half the weight of yellow ochre; golden, lemon-chrome, white-lead, and orange-chrome. In browns, umber (from Umbria) and sienna (from Sienna, Italy) come into play, dark-brown being burnt umber; while chocolate, and drabs of various tints from dark to lightest, are made by adding umber to white-lead, only one part of burnt umber to ninety-six of white-lead being required for the lightest of all. Blues are produced by mixing Prussian blue with turps and adding white-lead to the shade

required. In grays, a little ivory-black and orange-chrome added to the white-lead make all the difference.

Some useful information regarding methods of compounding paints adopted in the United States is given in a special report compiled for the Government at the Chicago Consulate.

In the States millions of homes are built of wood, which require painting every three years, while the great agricultural implement and wagon factories are also large users of paint. In all the large cities are paint factories, grinding every conceivable article convertible into paint. The **carbonate of lead** or white-lead chiefly used is ground in pure linseed oil, 1 gallon of oil to 100 lbs. of lead. **Barytes** (sulphate of barium), which is the main adulterant of white-lead in Great Britain (though much inferior to white-lead in covering power), is used in large quantities for "off brands" and mixed paints; and when used moderately is found not to depreciate the value of the paint from the stand-point of durability. The **oxide of zinc** is indispensable, because its whiteness enables the paint manufacturer to produce the more delicate tints, whilst it is also very light and bulky, and in combination with other materials adds value to them. **Sublimed lead** or **sulphate of lead** is a pigment greatly in favour. It is claimed to be unaffected by exposure to air, lasting, and practically non-poisonous. Galena ore or native lead sulphide, when heated to nearly white heat, vaporizes slowly, and the vapours in contact with air burn into lead sulphate; but simply heating a bulk of galena ore to vaporization is not practical, a specially-adapted furnace is required. Sublimed lead absorbs a great quantity of oil. It has peculiar properties, and must be treated by paint grinders in a special manner. If ground as a stiff paint with linseed oil it has a tendency to become dry and cake, but by a change in the process of grinding the difficulty is overcome and the paint does not cake. Mixtures of sublimed white lead and zinc have a special interest as an **iron paint under water**. It protects the iron perfectly, does not soften and absorb water, nor does it peel off, like zinc. **Silex** or silica is preferred in many instances to barytes, as not being so heavy. These—carbonate of lead, sulphate of lead, oxide of zinc, barytes, and silica—also marble flour, Paris white, whiting, and China clay, are some of the white pigments entering into paints as manufactured in

American
Paints.

Water-paint.

America. "Paris white" and whiting of other grades are made from English chalk, which is crushed and floated from one water cistern to another. The first precipitation gives "commercial whiting"; the second precipitation, finer grade, "gilder's whiting"; the third precipitation, still finer, "extra gilder's whiting"; the fourth precipitation, best grade, or Paris white. Venetian-red is manufactured by a steel wire company, who use up their scraps by converting them into an oxide, supplying the market with Venetian-red and copperas. A paint much used for ironwork, roofs, barns, and freight cars is "Prince's mineral", mined in Pennsylvania, and then crushed and roasted to a bright-red colour. Beside these, there are various chemical colours—chrome greens, yellows, vermilions, blues, "orange-mineral", and red-lead. The report quotes the following formulæ, some of which may be found useful:—

**Paint Materials
and Formulæ.**

Strictly pure white-lead ground in linseed oil: 100 lbs. of lead, 8 lbs. of oil.

Strictly pure zinc in refined linseed oil: 100 lbs. of zinc, 22 lbs. of oil.

Combination lead ground in linseed and corn oil mixed: One-third carbonate of lead or sublimed lead, one-third oxide combination lead, 100 lbs. oxide of zinc, 40 lbs. sublimed lead, 60 lbs. English Paris white, 1 gal. benzine dryer, 6½ gals. linseed and corn oil mixed in equal quantities.

Strictly pure lead: 70 lbs. sublimed lead, 30 lbs. carbonate of lead.

Combination lead: 75 lbs. sublimed lead, 75 lbs. oxide of zinc, 425 lbs. barytes.

Solution for mixed paints:

1. Dissolve enough sugar of lead in lime-water to make 3° solution (Baume). Make silicate solution 8° (Baume). Mix above in equal parts as may be necessary.

2. Slake 1 bushel of lime in 40 gals. of water, let it stand twenty-four hours, decant, and use clear liquor.

3. To make a silicate of soda solution 8° (Baume) requires 1 lb. of soda to 1 gal. of water.

4. White sugar of lead 2 lbs., sulphate of zinc 4 lbs.; dissolve in 6 gals. of water.

Emulsion: Linseed oil 3 gals., 2 solution, 3 gals., *b* 1½ gals., *c* 1½ gals., naphtha 5 gals.

Oil dryer: Take 5 gals. raw linseed oil, place in varnish kettle, heat to 300° F., add 10 lbs. of powdered flake litharge, 1 lb. of varnish lime. Heat three or four times till it has a consistency equal to thick molasses and will string strongly. Cool to 250° F., add 150 gals. naphtha and 1 quart ditronella.

Mixed paint formula:

(*a*) 400 lbs. of sublimed lead and 100 lbs. corroded lead ground to a paste with 12 gals. linseed oil. To be thinned with 7 gals. oil dryer, 14 gals. raw linseed, and 7 gals. emulsion.

(*b*) 250 lbs. sublimed lead, 150 lbs. oxide of zinc, 100 lbs. corroded lead ground to paste with 14 gals. raw linseed oil. Thinned with 14 gals. oil dryer, 14 gals. raw linseed, and 3 gals. 300° headlight-oil.

(c) 1400 lbs. sublimed lead, 340 lbs. oxide of zinc, 450 lbs. Paris white, 100 gals. linseed oil, 25 gals. benzine, 40 gals. silica solution, 4 gals. oil dryer, and 25 gals. turpentine.

(d) 600 lbs. sublimed lead, 600 lbs. oxide of zinc, 300 lbs. carbonate of lead and 250 lbs. raw linseed oil ground to a paste and thinned with 44 gals. boiled linseed oil, 32 gals. raw linseed oil, 11 gals. oil dryer, $11\frac{1}{2}$ gals. headlight-oil, 63° , and $16\frac{1}{2}$ gals. silica solution.

Vermilionette, which is much used as a substitute for vermilion, is made here by stirring up red-lead with a resin solution and adding acetate or nitrate of lead to precipitate the lead as a red lac. In America various formulæ are used. An example is: Orange-mineral, 200 lbs.; barytes, 200 lbs.; China clay, 25 lbs.; zinc oxide, 25 lbs.; eosine, 15 lbs.; mordant (for fixing colours), 15 lbs. The "mordant" is made by mixing 200 lbs. litharge, 250 lbs. muriatic acid, and 200 lbs. barytes.

Note that when ready-mixed paints are left uncovered they will dry up and skim over, so that it is necessary to keep them covered with a little water or linseed-oil. With regard to **packed paints**, a good plan is to have the Mixed Paints. colour shown on the can, and also on colour cards, each colour being denoted by its proper number or letter. In the States the manufacturers of ready-mixed paints in pots make it a practice to send out with each country order a supply of sample cards, so that everyone buying a tin of paint can be supplied with one of these advertisements, which are also useful for repeat orders. Thus the dealers in small towns are enabled to order just what they require, and are not obliged to keep a large stock of paints on hand to match the particular tint which a customer happens to need. The cans used for packing paint in America are 1, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, and $\frac{1}{16}$ gallon, and the labels are attractive. In this country the so-called "enamel" paints in tiny cans and a great variety of shades have obtained quite a vogue amongst the public, and are much sold for fancy work of all kinds.

Venetian-red, which is mentioned in the report above quoted as made in the States from steel scraps, is, properly speaking, a bright-red earth or ochre resembling scarlet chalk, derived, as the name suggests, from Italy. Paled with chalk, it is not infrequently sold as the much scarcer **Armenian Bole**, a substance originally imported from Armenia, and which is chemically a silicate of

aluminium. It is also counterfeited by mixing whitening, red ochre, and red oxide of iron. On the other hand, the name

Whitening, as **Raddle**, or **Reddle**, a bright-red earth found in Cumberland, Yorkshire, Gloucestershire, and Somersetshire, a red chalky sesquioxide of iron or hematite iron ore. **Raddle** is used by the housewife for colouring her brick floors or stone steps, also by the farmers for marking sheep. **Whitening** or **whiting** is made here by much the same process as in America, from "English" chalk, so largely found in the Downs of England. The chalk is ground up in mills with water and floated into long tanks, where the heavier sand settles first, while the lighter chalk floats further on, before it is deposited. Alum solution is also sometimes employed to assist the clarifying. From the final settling-pit the chalk thus purified is dug out to be dried in ovens slowly in handy moulds or loaves. Mixed with water or size, it is used for whitening walls and ceilings. Large quantities are used also for making **Putty** for the glazier, painter, and other workmen. For this purpose the whitening is simply mixed up well with linseed-oil, in the proportion of about 22 lbs. of oil to 112 lbs. of whitening. Pure linseed oil is said to be the only oil that can be safely used for glaziers' putty, although cotton-seed and other oils are sometimes sold as "putty oils". The raw oil should be used; the boiled dries too quickly. The method used is to form the whitening into a heap with a hollow in the middle—something like the crater of a volcano. In this hole put the raw linseed oil, mix together roughly, and complete the mixing process in a grinding-mill. A whiter kind of putty is made for painters' use by adding to the whitening and raw linseed oil a certain quantity of white-lead—say 14 lbs. of white-lead to 28 lbs. oil and 112 lbs. whitening. For **Hard Putty** a German recipe is: Mix a handful of burnt lime with 120 grams of linseed oil; boil down to the usual consistency of putty, and allow the plastic mass to spread out in a thin layer to dry in a place where it is not reached by the sun's rays. This yields eventually a very hard putty. When required for use it is made plastic by holding over the funnel of a lamp; on cooling it regains its previous hardness. Putty that has hardened may be ground up again with linseed oil, but this is not recommended; the better plan is to make no more at a time than is required.

Putty is used for rendering glass opaque, or for "**imitation ground glass**". Put a piece of fresh putty into a square of muslin, and twist the corners to form a handle to the pad. The pad must then be applied with a kind of steady dabbing motion, and with a little practice it will be found easy to cover the glass with a thin, white, even layer of putty, quite opaque to those outside, but transparent to light. If the putty seems too hard and dry, a little linseed oil may be worked up with it.

Various sundries sold by oilmen and grocers are dealt with in the next chapter. A few items may be added here as

Miscellanea.

For **staining wood** all aniline colours are useful. For example, if a red stain is required, plunge the wood (or rub it) in a solution of 1 oz. of curd soap in 35 fluid ozs. of water, then apply magenta diluted to the tint required.

A pretty effect may be produced on glass by "**frosting**" it with a hot solution of Epsom salts mixed with gum arabic. By substituting oxalic acid, sulphate of copper, or red or yellow prussiate of potash for the Epsom salts different colours may be obtained. For a margin or for figures, take a wet towel as soon as the frosting has become hard, and wipe away where you wish the glass to show clear. When dry the surface may be varnished.

Bronzes for copper and other metals are usually liquid solutions in which verdigris, sal-ammoniac, salt of sorrel, cinnabar, alum, and common salt are employed. To bronze wood and other articles, waste gold-leaf ground in with honey and washed, or Mosaic gold ground with bone ashes, is applied with size or oil varnish. Gypsum (*i.e.* Plaster of Paris) casts are bronzed with black-lead.

Water Paints are powdered colours mixed with a jelly or size to which warm water is added. The size is made by dissolving gum (such as acacia) in water, and adding a little borax to make a stiff jelly; and this is diluted with about six times its quantity of warm water. These paints are a modern variation of **Distemper**, which is colour ground up with size or gum, or with a mixture of egg-white and water. **Water Glass**, which is sometimes used as a paint or glaze to render the painted surface air-proof, damp-proof, or fire-proof, is merely silicate of soda of a glassy appearance. In the raw state it will mix with water, as explained in the chapter on EGG PRESERVING, a purpose for which it is now very largely used.

Gums are handled to some extent by oilmen. Gum is a substance which exudes spontaneously from the bark of such trees as the plum, peach, cherry, and acacia. The purest **Gums and Gum-resins**. "tears" are transparent or translucent, of a pale-yellow but sometimes of a dark colour, and containing sometimes chips of wood. The gums are named after the countries whence they are imported—gum-Arabic, gum-Senegal, gums of Bassora (Basorine), Barbary gum, East India gum, Chagnal gum, and so on. There are also **Gum-tragacanth**, from the *Astragalus tragacantha* of Crete and neighbouring islands, the white and reddish twisted ribbons, used by shoemakers and calico-printers; cherry-tree gum, or **French Gum**, used by hatters for smoothing the nap; and red gum. British gum, or **Dextrine**, is not correctly speaking a gum; neither are benzoin, elemi, copal, olibanum, &c., which are sometimes called gums. Gum is soluble in water, forming a very stable, thick smooth fluid; but insoluble in alcohol. The contrary is the case with resins; while **gum-resins** contain both a gum soluble in water and a resin soluble in spirit. Gums have no odour and but faint taste; gum-resins have frequently a strong characteristic taste and smell. Common gum-resins are aloes, olibanum, gamboge, ammoniacum, myrrh, scammony. **Gum - Arabic**, the typical gum, is the product of many different species of acacia (especially *A. senegal*) found wild in North Africa and elsewhere, and is chiefly imported from Alexandria, Cairo, and the Red Sea. The purest is in round tears, transparent, almost colourless, faintly odorous, slightly sapid, readily powdered, completely soluble in water. The precipitate with alcohol is the pure gum, and is called "Arabin". Cherry-tree gum contains about 52 per cent of arabin, and about the same quantity is found in gum of seeds, such as linseed. Gum-arabic is largely used in dressing fabrics, such as silk; in calico-printing; in pharmacy, for making lozenges, pills, &c.; in making ink, crayons, water-colour cakes, and cements. **Gum-Senegal**, which has much the same properties and uses, though less pure, is collected from the Senegal acacias in pieces about the size of a partridge's egg, with a hollow centre.

Varnish, so much used by painters and others, is a clear, limpid solution of resinous matter, capable of hardening without losing its transparency. The resinous substances most commonly employed for varnishes are mastic, sandarac, lac, benzoin, copal,

amber, and asphalt; the solvents used are fixed oil, volatile oil, and alcohol. Fixed-oil varnishes are the most durable, and the best adapted for all objects that are exposed to the weather.

Amber Varnish is such a one; it is composed of amber, linseed oil, litharge, and turpentine. One recipe is: Put 4 ounces of amber into a crucible, melt it with a small degree of heat, and pour out on an iron plate; when cold reduce to powder, and add 2 ounces drying oil (linseed oil thickened by boiling it up with litharge) and 1 pint of oil of turpentine. Dissolve the whole together into a liquid. Before a resin is dissolved in a fixed oil it is necessary (see OILS) to render the oil "drying"; for this purpose the oil is boiled with metallic oxides, in which operation the mucilage of the oil combines with the metal of the oxide, while the oil itself unites with the oxygen of the oxide. To accelerate the drying of this varnish, oil of turpentine is added. Volatile-oil varnishes consist of a solution of resin in oil of turpentine; they are used chiefly for paintings. The oil flies off and leaves the resin. Varnishes made from resins dissolved in alcohol dry speedily, but are liable to crack; this is corrected by adding a little turpentine. Gamboge, dragon's-blood, and other coloured resins or gums are used to colour varnishes. The coal-tar colours are not suitable for colouring varnish containing turpentine, benzine, or petroleum spirit. The oil recommended to be used is linseed, best Baltic, and which has been kept in air-tight vessels for twelve months. In preparing varnish with oil the resin is melted, the oil boiled, and the two mixed, after which the mixture is boiled, thinned, and cleared. Ure's *Dictionary of Arts, Manufactures, and Mines* gives full particulars as to the manufacture of varnishes of various kinds; and a valuable work has been translated by Morris and Robson from the German of Andes. In France, according to the *Corps Gras Industriel*, the usual solvent for sandarac is alcohol, this being sometimes employed along with oil of turpentine. The colour of **Sandarac Varnish** varies from straw to dark-yellow, according to the colour of the resin. As a rule, some Venice turpentine is added to it so as to produce the desired elasticity, and if applied in very thin layers a very fine effect will be obtained. This varnish can be used for a variety of purposes, including those for carved objects, leather, paper, wood, &c. The usual recipe consists of five parts

Various
Varnishes.

sandarac, from three to five parts Venice turpentine, and fifteen to twenty-four parts 95 per cent alcohol. If, however, it be

French
Sandarac
Varnish.

intended to apply the varnish in very thin coats, the proportion of the alcohol (or spirit) may be increased with advantage to forty-five parts; this applies more particularly to varnishes employed for drawings and water-colour paintings. When the varnish is to be used on wood, the Venice turpentine mentioned in the above recipe should be omitted, and two parts of elemi or mastic used instead, or a solution of two and a half parts of gum lac and the same amount colophony can be added, in twenty-five parts of 95 per cent alcohol. When, however, the varnish is to be applied to metal, it is best to substitute for the mastic either a mixture of mastic, gum lac, and benzoin, or one containing mastic and Venice turpentine. In the latter case, a liquid composed of equal parts of alcohol and oil of turpentine should be used instead of the alcohol (or spirit). A **flexible varnish** can be prepared by dissolving four parts of sandarac and two parts of colophony, which are then dissolved in eight parts of oil of turpentine, afterwards adding a solution of caoutchouc in coal oil. A good varnish can be obtained from sandarac (which is well suited for photographic negatives) by dissolving, say, $4\frac{1}{2}$ lbs. of sandarac in 25 lbs. of spirit. In making spirit varnishes no heat is used; if it is, an explosion may result. According to Ure, varnish made from African copal alone possesses the most elasticity and transparency; and particular care in the choice of his linseed oil is impressed on the varnish-maker.

Copal
Varnish.

Copal Varnish, called in France *Vernis martin*, is prepared, according to an old recipe, in the following manner:—Pour into a well-glazed strong earthen pot, large enough to hold a gallon, and made warm, 4 ounces of Chio or Cyprus turpentine, and, when this is dissolved, 8 ounces of finely-powdered amber. Mingle them well and set them on the fire for a quarter of an hour, then take off the pot and pour in gently a pound of copal, finely bruised but not powdered. Stir the mass and add 4 ounces of Chio turpentine and a gill of warm turpentine oil; set again on a brisk fire for about half an hour, and then, after taking it off, stir the contents well, and add 2 ounces of the finest and whitest colophony. Put the pot again on a very brisk fire, and let it remain until the whole of the contents are dissolved and as fluid

as water; then remove from the fire, and after a few minutes' standing pour in gradually 24 ounces of poppy, nut, or linseed oil, made drying, and boiling hot. Stir the mass with a deal stick, and when the gums and oil are thoroughly incorporated set it over the fire for a few minutes, still stirring, and let the pot boil up once. Taking it off again, pour in a quart of hot turpentine; stir together and boil up once more. Finally, take off the pot and pour in a pint more of hot turpentine, still stirring well. If the gums are thoroughly melted and well incorporated the varnish is now made. When cool it is strained through a close cloth into another vessel, and if too thick is thinned with oil of turpentine until it becomes of the consistency of linseed oil. After being strained a second time it is bottled for use, and should stand at least a month before being used. This varnish has much lustre.

Note that too much drier in varnish renders it opaque and unfit for delicate colours. All copal or oil varnishes require age. Turpentine improves by age, and varnish by being kept in a warm place.

7. OILSHOP SUNDRIES

Some of the miscellaneous articles, such as Black-lead, Washing-soda, Matches, &c., which are here brought together, are of more or less importance to every grocer, as well as to the oilman specially, but it will be convenient perhaps to arrange them in groups in this chapter. For some of the recipes quoted we are indebted to Law's *Grocer's Manual*, the columns of *The Grocer*, &c. A useful collection of recipes is also published by the proprietors of *Oils, Colours, and Drysalteries*. With reference to articles containing any of the **poisons** scheduled in the Pharmacy Acts, it is important to observe that these cannot be sold retail except by duly qualified chemists, and must be labelled "Poison". See **DRUGS**.

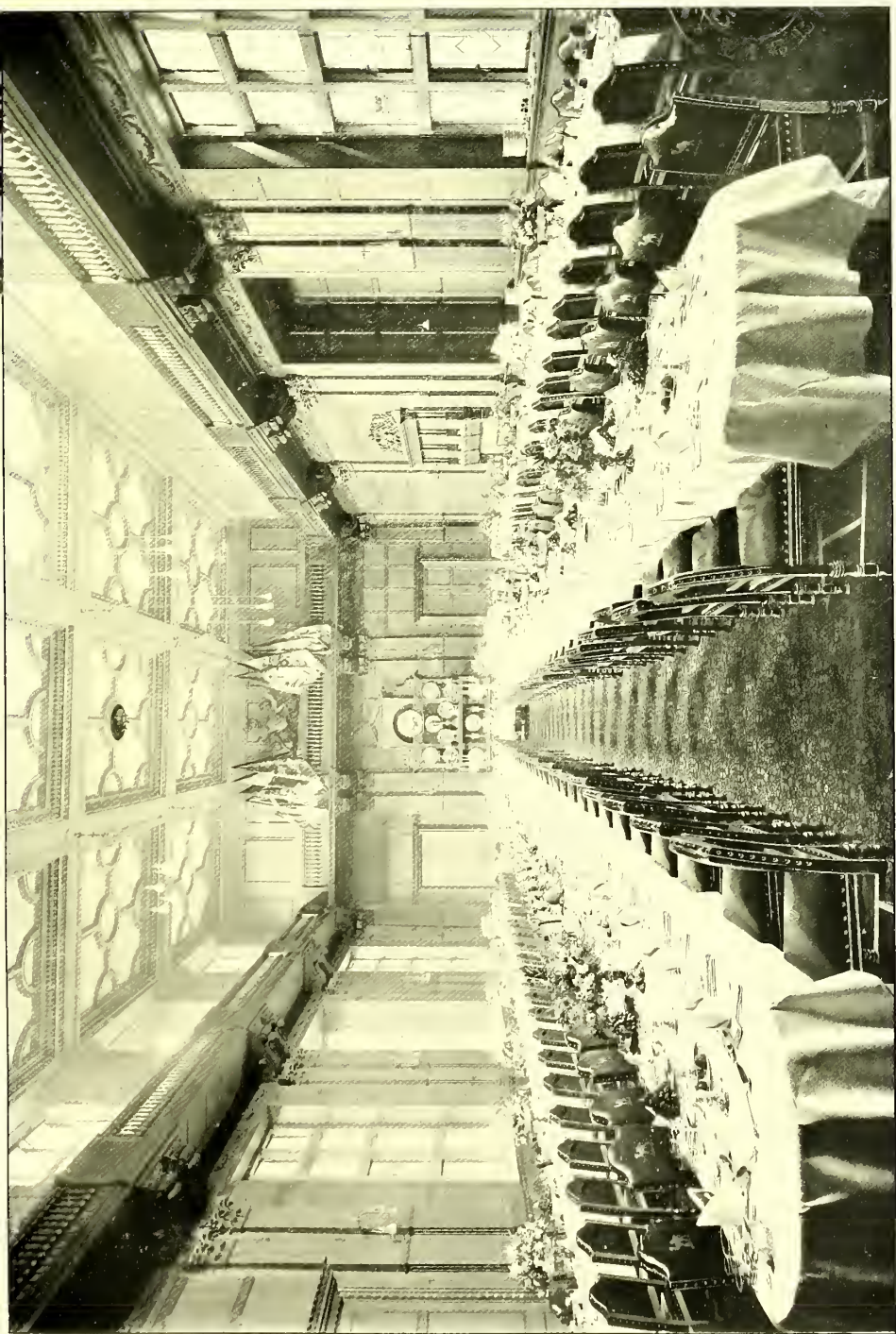
Bath-brick is one of various stony and earthy substances handled by the grocer and oilman. The genuine Bath-brick is made from the "slime" or mud of the river Parret, Earths and Stones. near the town of Bridgewater, in Somerset. The slime is deposited by the tide each time it comes up, and is found within

a very small area where the salt water meets the fresh. Along the banks of the river are pits thirty or forty yards in length, bricked and boarded, and so shaped as to present a perfectly squared-off and even surface, with no angles or slope from which the outgoing tide can carry away what it has deposited. On these raised "slime batches" the slime lodges just at high-water level at the turn of the tide; and except during winter freshets when the sediment is disturbed, the trench fills in about two months. Taken from the batches, the clay is piled in heaps on the river banks, and thence wheeled in barrows to the "pug-mill"—a simple mill something like a coffee-mill, and worked by a single horse. The clay is shovelled into this mill, and emerges with the consistency of dough. It next passes to the "moulder", who makes bricks of it by slapping a lump into a four-sided frame and trimming it off with a thin piece of wood. A turn over upon a stamp impresses the name of the firm, and the brick is then pushed from its frame, and passed on to be put up with others in rows and dried by sun and wind under a slanting cover of tiles. The final process is baking in a kiln for four days; when cool the bricks are rubbed smooth on a stone. These bricks are used for various purposes in the household, such as cleaning knives, polishing metal utensils, cleaning stone floors, polishing brasses, cleaning (with soft soap) wooden trenchers, and so on. **Hearth Stones**, used for cleaning hearths, scouring stones, &c., are squares of a soft chalky sandstone. **Flanders Bricks** are an article much resembling Bath-bricks.

Rotten-stone, used in the household for polishing brasses and other purposes, is a soft powdery stone, gray or reddish in colour, found in Derbyshire, South Wales, and in the state of New York. **English Tripoli** is another name for it. **Tripoli Powder** (or *Tripoli*) itself is a shelly stone-powder of a whitish, red, yellow, or gray colour, named after the Turkish town where it was first found, and used with or without oil for metal polishing. Swedish **Bergmehl** is somewhat similar, and powdered stone something like it is also found in Bohemia, France, United States, and elsewhere. **Jewellers' Rouge** is the fine scarlet powder used for polishing gold or silver, and is made by heating yellow oxalate of iron until the carbonic acid is driven off, when the red powder is left. Sulphate of iron calcined in crucibles yields jewellers'

GROCERS' HALL, LONDON

Although the Worshipful Company of Grocers as it exists to-day has, save in name, little or no connection with the grocery trade, its mediæval history, of course, belongs to the trade, as explained in this work, and its archives and Hall have much interest for grocers who are students of history. The first Grocers' Hall was built in 1427 "in Conyhoope-lane in the Warde of Chepe". With the exception of a single turret, in which, fortunately, the Company's ancient records were stored, the Hall was totally destroyed in the Great Fire of London in 1666. It was shortly afterwards rebuilt, and when the Bank of England was founded that puissant institution leased and occupied the building for a considerable number of years—until the Threadneedle Street offices were erected. The garden surrounding Grocers' Hall had remained unchanged from the earliest times until the Hall was rebuilt in 1798. Recently the Hall was again rebuilt on the same site.



GROCERS' HALL, LONDON—The Livery Hall

rouge, and a coarser dark-red powder called **Red Crocus Powder**. The rouge used for toilet purposes is a different article made by mixing carmine (cochineal) with carbonate of magnesia or powdered French chalk, or from this latter and dried safflowers. With the addition of oil the rouge so made is sometimes prepared as a paste.

French Chalk is the pearl-gray or grayish-green mineral, having a soapy feeling, used as a glove powder, by glaziers for marking glass for cutting, by chemists for stoppers (acids having no action upon it), also for gas-burners, lining ovens, and so on. It is a hydrous magnesian silicate, also known under the names of **Soap-stone**, **Soap-earth**, **Steatite**, **Mineral White**, and **Talc**, the latter being the softer and the stone the harder form of the substance. **Pumice-stone** or **Pumice** is the mineral substance derived from the stony froth ejected by volcanoes, Etna, Hecla, and Vesuvius being well-known sources. So light that it floats on water, it is porous, brittle, and hard, and is used by painters for cleaning paint, also for preparing skins and some kinds of leather, and for polishing ivory, wood, marble, glass, and metals. **Fullers' Earth** is a fawn-coloured or greenish-gray greasy-feeling marl or clay silicate of alumina, found in Surrey, the Home Counties, and Gloucestershire, and also known as **Woburn Earth**, from one of its sources in Bedfordshire. Its property of absorbing grease is what causes it to be used by fullers in treating cloth. It is sold in the lump, and also in the powder produced by soaking it in water. **Terra Alba**, or gypsum fine-ground, and the white powder from **China Clay**, are sometimes offered as fullers' earth, but lack the alumina which is for some purposes its most important constituent. **Terra Alba** is another name for **Plaster of Paris**, the anhydrous sulphate of lime which when mixed with water (and a little salt for quick setting) is useful for moulding. **Emery** is a very hard mineral (a form of corundum) named from Emeri in the Greek island of Naxos. Crushed into powder and sprinkled on some fabric coated with hot glue it makes emery-cloth; attached in the same way to paper it gives emery-paper; ground up with cardboard pulp and dried in sheets it makes emery-board; mixed with melted suet and bees'-wax it forms emery-cakes; or mixed with fireclay and baked it forms emery-stones and emery-wheels. The Greek emery derived from the copper-mines is accounted best, but large quanti-

ties from iron-mines and other quarries are imported from Smyrna. **Glass-paper** and **Glass-cloth**, used for polishing wood and metallic surfaces, are prepared in much the same way as emery-paper, &c., glue being applied to the paper or cloth, and the adhesive while hot being dusted with powdered glass, coarse or fine as desired. Another polisher of the same kind is **Sand-paper**, which is made in the same way as emery and glass paper, but substituting for the rough material hard sand (not sea-sand), or powdered calcined flints, the sand being sifted to the required degree of fineness. **Asphalt** is natural pitch, damp-proof and flame-proof. For some other chemicals see the chapter on DRUGS.

Chamois Leather or **Wash Leather**, so much used for polishing, is not often nowadays made from the skin of the Swiss mountain-goat, that of the ordinary goat or the sheep being found suitable for the purpose, and being treated with oil to render the material soft and pliable. To cleanse these leathers they should not be washed in water only, or they will dry hard; the cleansing may be effected by a little soda and soap in warm water, plenty of soap being rubbed in. House flannel, scouring cloths, dusters, &c., we need only mention.

Blackening may head our Polishes—a numerous family. It usually contains for its principal ingredients oil, vinegar, ivory- or bone-black, sugar or molasses, and sulphuric acid, though every manufacturer has his own recipe which he carefully keeps secret. The only difference between the liquid form and the paste is that in the paste there is less vinegar. One famous blackening which bears the name of patent consists of 18 ozs. of caoutchouc dissolved in 9 lbs. of hot rape oil, 60 lbs. ivory-black, 45 lbs. molasses, and 20 gallons vinegar of strength No. 24, in which 1 lb. finely-ground gum-arabic has been dissolved. After being carefully triturated in a paint-mill the mixture is stirred strongly for half an hour, in the course of which 12 lbs. sulphuric acid is added in small successive quantities. The mass is stirred for half an hour daily for a fortnight, then 3 lbs. gum-arabic is added; then the stirring is resumed, and carried on daily as before for another fortnight. This gives fine liquid blackening. If paste is desired, the amount of vinegar used is but 12 gallons, in which quantity the gum-arabic is dissolved as stated for the liquid. The paste is obtained after about a

week of daily stirrings. Other paste blacking usually shows on analysis about 68 per cent of molasses, 13 per cent of bone-black, 12 per cent of sulphuric acid, $4\frac{1}{2}$ per cent of soda, and $2\frac{1}{2}$ of oil or fat of some kind. Sour beer is sometimes used instead of vinegar; and spirits, wood alcohol, turpentine, sperm oil, linseed oil, or sugar may enter into the composition in place of other similar ingredients named. A recipe quoted in *Law's Manual*, which collates a number of those in common use, gives lampblack 112 lbs., soot 56 lbs., treacle 46 lbs., sulphuric acid 32 lbs., oil $1\frac{1}{2}$ gals., water 3 gals. The lampblack, soot, treacle, and oil are first mixed, then the acid and water together are added, and the whole mass is mixed well and covered over. After a day or two it is simmered for about ten minutes in an enamelled copper, being well stirred meanwhile, is then taken off the fire and cooled and again stirred. In this final form it may be put up in tins; or the paste may be spread out on trays and left for a week or more to stiffen, after which it may be cut up into blocks and then wrapped in oiled paper, prepared by soaking paper in boiled oil and afterwards pressing out the superfluous oil. **Brown Boot-polish** is made by dissolving yellow wax with water, turpentine, soap, potash, and a little dye. Take, for instance, an ounce of soap, a little brown dye, and two drachms of carbonate of potash, and dissolve in boiling water, 20 ozs. Have ready 20 ozs. turpentine in which 7 ozs. of wax have been melted. Add the first mixture to the latter and mix. For **Brown Cream**, petroleum jelly and half as much ceresin may be mixed with olive oil and a little yellow colouring. A third recipe recommends melting yellow wax and adding about three times its weight of turpentine, then adding to this a similar quantity of water in which resin soap has been dissolved; stir the mixture and add colouring. **Harness Paste:** Ivory-black, 2 lbs.; Prussian blue, $\frac{1}{2}$ lb.; indigo, $\frac{1}{2}$ lb.; yellow wax, 4 lbs.; oil of turpentine, 8 lbs.; oil of origanum, $\frac{1}{2}$ lb. **Dressing for Boots:** Boiled linseed oil, 20 lbs.; resin, 4 lbs.; bees'-wax, 4 lbs. An example of **Leather Preservative** is thus made: Turpentine, 5 lbs.; castor oil, 5 lbs.; ceresin (purified ozokerite), 5 lbs.; linseed oil, 50 lbs.; wood tar, $1\frac{1}{2}$ lb.; melted together on a water-bath. **Varnish for Leather:** Dissolve $2\frac{1}{2}$ ozs. of shellac in powdered form in a pint of methylated spirits and add lamp-black to colour, and a little camphor. **Dubbing** is made by melt-

ing together black resin, tallow, and oil; or melt paraffin-wax, resin, naphthalene, 2 lbs. each, and soft soap, 1 lb., and add a gallon of warm paraffin, and a little lampblack.

Black-lead in reality contains no lead, but is the popular name for **Plumbago**, or **Graphite**. There are two leading varieties of this form of native carbon: (1) Crystallized or foliated, which is found in small six-sided tables in Ceylon, Australia, New York State, and elsewhere; (2) Amorphous, which is softer, blacker in the mark, and is largely used for pencils. Borrowdale, the beautiful vale in Cumberland, formerly produced much graphite, and it also came from Siberia; but the chief sources of the kind used for polishing stoves, &c., are now Bohemia, Austria, Hungary, and Bavaria. The raw material is sold in lumps, chips, or dust at prices according to its freedom from extraneous earthiness. To refine it the graphite is sifted and washed and treated with hydrochloric acid, after which it is ground up in a mill and mixed into a paste with paraffin oil, water, &c., and pressed into blocks. In reference to stoves, it may be mentioned that hardware dealers use turpentine and black varnish for polishing; properly put on, this will last throughout a season. A good black **Stove Varnish** is made by stirring up ivory-black in ordinary shellac; when used for fireplaces or heating-stoves it should be applied when they are cold. This varnish may be used for wood and stone as well as iron. A **Rust Preventive** for iron and steel is made by melting together one part of camphor and about twelve parts of vaseline, and adding a little black-lead. Law's *Grocer's Manual* says a very fair quality of **Stove Polish** may be made from 86 lbs. Bohemian lead, 28 lbs. Ceylon lead, 12 lbs. sulphuric acid, 7 lbs. ground alum, 4 lbs. crude glycerine. Pour the acid over the lead, add the alum and glycerine, and grind with enough oil substitute to an easy smooth paste. The "Oil Substitute" is made thus: Paraffin, 1 gal.; water, $\frac{1}{2}$ gal.; naphthalene, 2 lbs.; soft soap, 1 lb. The soft soap is boiled and dissolved in the water; the naphthalene liquefied by melting, the paraffin added, and the whole finally stirred till cold.

Polishes and Pastes besides those already mentioned are sold by the oilman for such purposes as polishing metal, plate, linen, and windows. In metal polishes such ingredients as finely-

powdered flint, tripoli powder, and powdered glass are employed. In one recipe 2 parts each of powdered glass and powdered pumice-stone and 1 part of putty powder are mixed with oleic acid sufficient to form a paste, 1 part of oxalic acid ^{Metal Polishes.} being added. In some of the latest metal polishes petroleum spirit is used largely—an objection in one sense, for the authorities regard it as dangerous and will not allow it to be sold without the ordinary petroleum spirit license. The proprietors of named polishes to which this objection does not apply usually make a point of the fact to recommend the goods. A mixture for **cleaning brass** quickly is made by mixing finely-rubbed bichromate of potash with twice its bulk of sulphuric acid and an equal quantity of water. For **Brass Polish** add to 9 lbs. of rotten-stone 2 lbs. of water in which an ounce of oxalic acid has been dissolved; mix these up well, and 1 lb. sweet oil, 1 lb. soft soap, and 2 ozs. oil of turpentine; then mix all up together. Other polishes are made by mixing tripoli, rotten-stone and rouge, or either, with linseed oil. Note that when brass or copper are tarnished they may be brightened thus: Warm the brass and dip into water in which washing-soda has been dissolved; then dip in clean water to remove grease; then immerse for a moment in a bath of 1 part each (by measure) of sulphuric acid and sal-ammoniac, 2 parts nitric acid, and 4 parts water; then dip in clean water and dry in saw-dust. An **Anti-rust Mixture** for preserving bright metals from rust is made by melting together equal parts of ozokerite and bees'-wax; this mixture to be rubbed over the surface of the metal. To **preserve Iron** exposed to wet, a varnish is made by compounding mercury 120 parts, tin 10 parts, green vitriol 20 parts, water 120 parts, and hydrochloric acid of 1.2 specific gravity 15 parts. A **Metal-Silvering Powder**, by which copper, brass, and some other metals may be silvered, is made by mixing potassium cyanide 12 parts, silver nitrate 6 parts, calcium carbonate 30 parts. This has to be kept in a well-closed bottle, and it is applied with hard rubbing, after which the bright surface is rinsed with water, dried, and polished, care being taken that the powder does not touch the hands. Note that it is *highly poisonous*. A mixture for **cleaning nickel-plate**, such as signs, is made by adding to rouge enough lard or lard oil to form a paste; rub the bright parts with a wash-leather and a little of this paste,

and wipe with a slightly-oiled clean rag. **Plate Powders** containing mercury are not recommended; for gold, jewellers' rouge is used, and for silver, fine prepared chalk. When plate is dirty, it may be boiled in water containing a little carbonate of soda (or washing-soda) and calcined hartshorn; being polished afterwards with a little prepared chalk and water applied by a soft woollen duster or wash-leather. Another method is to boil in water containing to the gallon about an ounce each of cream of tartar, common salt, and alum. For polishing tarnished articles powdered magnesia is used, wet first and dry afterwards if the metal is much tarnished, but dry only if little. A polishing powder recipe gives: Prepared chalk, 8 parts; jewellers' rouge, 1 part; powdered sodium hyposulphite, 2 parts; diatomos, 1 part; mix and apply on rag, using wash-leather to polish.

Starch Polishes, Glosses, &c., are compounded of such materials as borax, starch, stearin, paraffin-wax, &c. The following are examples:—*Gloss*: Starch 18 parts, borax and stearin in powder 1 part each. *Glaze*: Borax powder 7 parts, spermaceti powder 1 part. *Enamel*: Equal quantities of powdered soap and pumice-stone. *Polish*: Lard, with a little white wax melted together to a cream, 17 parts; and add glycerine 1 part and ammonia solution 2 parts, mixed.

Window Polish is prepared by moistening calcined magnesia with benzine sufficiently to let a drop form when the mass is pressed; keep this in glass bottles with ground stoppers or the volatile benzine will escape. Apply on a wad of cotton. Mirrors may be cleaned with this polish. Plate-glass may be polished well with a little fine rouge applied on a cotton-wool pad covered with cotton velvet. A mixture used for preventing cloudiness in windows is made of 60 per cent methylated spirit and 40 per cent glycerine (common quality), which is applied uniformly over the window on a clean cloth. The *Pharmaceutische Zeitung* recommends 55 grams of glycerine dissolved in a litre of 62 per cent alcohol, to which add a little oil of amber to improve the odour.

Pastes and Polishes for Furniture, Floors, &c., have also to be stocked. **French Polish** consists commonly of shellac dissolved in methylated spirits; sometimes a little mastic or gum benzoin is added, and frequently naphtha is used in place of the methylated

spirit. Furniture polish, furniture paste, &c., are usually different forms of bees'-wax and turpentine. Thus **Furniture Paste**: Turpentine, 38 ozs.; alkanet root (to colour) 3 ozs., **Furniture Pastes.** macerated in the turpentine for a week or so; add 4 ozs.

yellow wax and 10 ozs. hard paraffin. **Furniture Polish**: Castile soap, 2 ozs.; bees'-wax, 1 oz.; white wax, 1 oz.; turpentine, 16 ozs.; water, 26 ozs.; heat the soap with the water almost to boiling; mix the wax and turpentine together in a basin and pour on them the soap-water, stirring well together. Or melt together bees'-wax, turpentine, and linseed oil, equal weights. Or melt bees'-wax 5 ozs., with 3 ozs. white wax, and add to them while hot half a pint of turps; stir into a pint and a half of boiling water $\frac{3}{4}$ oz. of powdered Castile soap and a pint of turpentine; add the two mixtures together and mix well, and before potting stir again. **Furniture Oil**: Vinegar, 15 ozs.; linseed oil, 15 ozs.; benzoin, 2 ozs.; spirit of salt, 5 ozs.; mix well together. Or heat together a pint of linseed oil and 2 ozs. of alkanet root, and after straining add 1 oz. of shellac varnish. The Japanese are said to mix tea, white of egg, and spirits of salts with linseed oil to make a furniture polish. **Floor Polish** may consist of bees'-wax and turpentine, with or without a little colouring or other matter; thus: yellow wax 1 lb., turpentine, $1\frac{1}{2}$ lb., and a little turmeric or spike oil; or paraffin wax and yellow wax melted and coloured; or yellow wax 4 ozs., liquid paraffin 1 oz., turpentine 3 ozs., benzine 2 ozs. For floors **waxed colours** are also sold, which are applied by diluting with hot water and painting on with a stiff brush, a woollen cloth being used to polish when the stuff has dried. These waxed colours are made by boiling yellow wax with caustic soda lye— $2\frac{1}{2}$ parts by weight of wax to $7\frac{1}{2}$ parts of lye—then adding about 2 parts of ochre of the required tint. To *remove oil-stains* on woodwork or floors dissolve a little oxalic acid (poison) in hot water; rub this on the stain with a piece of waste tied to a stick; then wash the place with hot water and soap or soda. To *remove old paint* try a solution of an ounce of washing soda and a table-spoonful of vinegar in a half-pint of water. **Preservative com-** **Preservative.**
position: A German composition, or paint, for protecting stone, wood, cement, &c., from the effects of damp or other deleterious influences, consists of quicklime, chalk, mineral colours,

turpentine, boiled oil, galipot, resin, and benzine. The lime, chalk, colours, and turpentine are first mixed and then made into a paste with the boiled oil. The paste is finely ground and mixed with the resins previously dissolved in the benzine.

Colouring matters of various kinds, quite distinct from those mentioned under the head of Paints in the foregoing chapter, are handled in one way or another by the grocer and Dyes and Colours. the oil and colourman and the trades allied. The **Aniline Dye** trade is now a very large industry, more especially in Germany, where the art of preparing these beautiful colours from benzole, a constituent of coal-tar, has been carried to a high degree of perfection. The name comes from *anil*, the indigo plant, from which aniline was first produced by a German chemist in 1834, although in the same year the same substance was produced from coal-tar. From indigo and magenta the coal-tar and chemically similar dyes have been increased by combinations to approaching three hundred different tints. When in the form of powder the aniline colours are prepared for use by pouring hot (but not boiling) water upon them and thoroughly stirring the solution, which should be used warm. Note that Manchester (or Martin's) yellow, metanil yellow, picric acid, saffron substitute (dinitrocresol), beta naphthol orange, dinitroso-resorcinol, naphthol green b., and aurantia are distinctly poisonous, whilst none of the anilines can be safely used in beverages or foods; in fact their use in such renders the user liable to heavy punishment under the food laws.

The **Innocuous Colours** which may be used in food and drinks or confectionery include those prepared from annatto (if not adulterated with a deleterious substance), saffron, turmeric, logwood, chlorophyll, litmus, cochineal, caramel (burnt sugar), and so on; while some fruits, such as strawberries, currants, plums, raspberries, yield their own colouring. **Annatto** is a bright orange-red substance prepared from a waxy pulp which surrounds the seeds of an evergreen shrub (*Bixa orellana*) found in Brazil, Cayenne, Ceylon, Jamaica, and other tropical countries. When the seed-pod is rubbed or crushed in water the pulp is removed and settles as a sediment, which is afterwards strained, boiled, and evaporated until the mass is of the consistency of putty, when it is made into cakes. Lime, starch, flour, &c.,

are frequently added, and sometimes more objectionable adulterants, such as red-lead, which is a poison. Flag annatto and pearl-ash in equal quantities diluted with water and boiled yield the annatto liquid or solution. Cheeses, such as Edams, are frequently tinged with annatto; so also is butter. **Turmeric** is the ground root of a plant of the ginger tribe, *Curcuma longa*, which grows in the East Indies, China, and Zanzibar. Dissolved in alcohol it yields yellow crystals, or ground to a powder, of an orange-red colour, it is useful as a condiment and colouring substance for pudding spice, mustard preparations, pickles, and curries. A somewhat different kind is prepared from canna roots in West Africa. **Saffron**, also known as Hay Saffron, consists of the flower stigmas of a species of crocus, *Crocus sativus*, which has been famous for medicinal virtues from ancient times. A good deal of it comes from Spain, where it is classed in as many as five grades of quality, but Austrian and French are usually reputed better. In hot water or spirits the dried stigmas give a fiery orange-yellow fluid, aromatic and of slightly bitter and pungent taste, but wholesome enough and a good deal used for colouring jellies, soups, sweets, &c., as well as for drugs and pains. The liquid should be kept in a corked bottle. When a thread or two of the saffron stigmas are placed on the surface of warm water they will expand so that their shape can be seen; in this way the true article can be detected from the safflower petals or other substitutes, saffron being a good deal counterfeited. **Logwood** is a dark-red, almost black, dye, extracted from the logwood-trees which grow in Jamaica and elsewhere in the West Indies. **Alkanet**, which is used for giving a crimson colour to various commodities, including spirits, oils, essences, varnishes, &c., is a brownish-red colouring material obtained from the skin of the roots of the *Achusea tinctoria*, a plant found in various parts of Europe and Asia. **Chlorophyll**, which imparts a green tint to oils, &c., is the natural pigment which colours leaves and plants—green peas, for example. **Litmus**, so well known as a test in chemistry (for instance, butter, &c., in which boric acid has been used will change the colour of litmus-paper), is an alkaline solid substance prepared from the orchella weeds, which yield a purple colour, from which orchil liquid and cudbear powder are also obtained. **Cochineal**, giving crimson and scarlet dyes (such

as carmine) and cochineal liquid for confectionery, jellies, &c., is an extract prepared from certain scale-insects called *Coccus cacti*, specially grown upon the nopal or Indian fig-tree of the Canary Islands and elsewhere. The insects, which are called "grain" (black, silver, and rosy-black), are the size of small peas, and have a dark body covered with fine silvery dust, which gives them a grayish appearance. Several times a year they are scraped off the plants on which they feed, killed by the bags of them being dipped in boiling water, then dried. The colouring-matter of the insect is extracted by chemical treatment, and the liquid for culinary use is prepared by boiling the cochineal with carbonate of potash and adding alum, sugar, and citric acid.

Several *vegetables* yield colours—the beet and carrot red, the mallow violet, spinach green, parsley emerald (such as is used in "Sauce Verte"), and so on. **Dragon's Blood**, which yields a rich red, is the resin (sometimes powdered) of a Malaysian palm, also obtained from an East Indian palm and from eucalyptus-trees. **Argol**, from which we get cream of tartar, and which is used by dyers for preparing stuffs, is the crude tartar which forms inside wine casks, white or red according to the wine. **Cream of Tartar** sometimes contains traces of arsenic.

Inks for writing commonly owe their properties to tannate of iron held in suspension by some kind of gum. **Gall-nuts**, or Galls (the morbid growths of vegetable matter around wounds inflicted upon trees by certain insects, and of which our British oak-galls or oak-apples are a specimen, although they occur in commerce chiefly as Levantine imports), contain gallotannic acid, which gives a black precipitate with persalts of iron; they also contain pectose, which under exposure to the air converts gallotannic acid into gallic acid, an acid which colours ferric salts a much deeper black than does the gallotannic acid. These facts are utilized in the preparation of writing inks. According to *The New Popular Encyclopedia*, the essential points in the preparation of a good writing ink are the presence of an iron salt, the infusion of gall-nuts and gum, and the allowing the mixture to remain for some time exposed to the air. All other substances which are added to ordinary ink in the place of gall-nuts only impair its qualities. The following is one method for preparing **Black Writing Ink**:—12 lbs. of bruised nut-galls are boiled for

three hours in a cylindrical copper with 9 gallons of water, the water lost by evaporation being replaced from time to time. After all solid matter has settled to the bottom the clear liquid is drawn off and mixed with a mucilage prepared by dissolving 5 lbs. of gum-senegal in a little hot water and filtering; a solution of 5 lbs. of ferrous sulphate (green vitriol) is then added, and the whole liquid allowed to stand until it begins to get black, when it is drawn off into bottles. It is preferable to bottle the ink before the iron is entirely converted into ferric gallate, so that, when used for writing, the particles of the ink may penetrate into the paper, and the iron salts there undergo a further oxidation and combination with the gallic acid. The same result is obtained in more marked degree by adding a small quantity of acid (usually sulphuric) to the ink; this appears to be neutralized by the paper, and the complete blackening of the ink therefore takes place only after characters have been traced with it upon the paper. To prevent ink becoming mouldy a small quantity of such substances as essential oils or carbolic acid is sometimes added. The addition of sugar to ink causes it to adhere when dry, so that a copy of the writing may be taken off by pressing a moistened sheet of unsized paper upon the written paper. This is the principle applied in **Copying Ink**. A little glycerine may be added. Ink is sometimes prepared in cakes or powder, which, when dissolved in water, may be used as ordinary ink; the thickening ingredients added are usually madder and indigo dissolved in sulphuric acid. For **Red Ink** dissolve 1 part of good carmine in 120 parts of caustic ammonia, and add $1\frac{1}{2}$ parts of gum-arabic. Or pour 32 parts hot water on 12 parts pulverized cochineal and 4 parts ammonium carbonate, and afterwards pour off the clear liquid. **Blue Ink** is made in good quality by dissolving 30 parts of pure Prussian blue in 4 parts of oxalic acid dissolved in 1000 parts of water; **Yellow Ink** is made with decoction of saffron; **Green Ink** with indigo-carmine mixed with picric acid. **Blue-black Ink** may be a solution of aniline black, with a little acetic acid and gum-arabic added. **Indelible Ink** may be prepared by adding Indian ink (which is essentially finely-divided charcoal) to ordinary writing-ink. Traill's indelible ink is made by dissolving wheat gluten in vinegar of specific gravity 1.033 after steeping it in water for twenty-four to thirty-six hours; the liquid is rubbed up with

Indian ink or lampblack. This ink withstands the action of water, chlorine, or dilute acids (such as oxalic) which will remove ordinary ink. **Marking Ink** usually consists of a solution of silver nitrate thickened with gum, and sometimes coloured with sap green. The linen to be marked is sometimes prepared by covering it with a solution of carbonate of soda, in which case the oxide of silver is precipitated on the linen when the ink-marks are heated. A solution of potassium cyanide (prussic acid) effaces the ink. Aniline black is also used as a marking ink. The aniline soluble dyes are **Ink-powders**; all that is required to render them fit for writing with being the addition of cold water. Another ink-powder is made by grinding together and well mixing log-wood extract and indigo with a little bichromate of potash. **Printers' Ink** is thus prepared: Clarified linseed oil is boiled with a certain amount of yellow soap and a drying agent such as borate of manganese. When the oil has assumed somewhat the character of varnish, good lampblack, about 16 per cent of the weight of the oil, is added and stirred up with the oil. Coloured printing inks may be made by adding pigments (instead of the lampblack) to the oil while it is being heated, vermilion for red, lead chromate for yellow, ultramarine for blue, and so on. Andes's work will be found useful on this subject.

Size and Glue are made from the refuse scraps of the parings of hides and skins, the clippings of hoofs and horns, and other gelatinous tissues of animals. The best quality of **Glue** is obtained from the clippings and parings of **Manufacture.** ox-hides, the older skins being preferred; other materials used are the skins of sheep, calves, cows, hares, dogs, cats, also the refuse from tanneries and tanning-works, old gloves, sinews, tendons, and other animal offal. The raw material is first treated in tanks with milk of lime, or dilute alkali, to remove fat, blood, and flesh. The mass is then well washed with water and exposed to the air, after which it is transferred to a boiler, and by steam or fire subjected to a gentle ebullition, being repeatedly skimmed meanwhile. The boiler or cauldron has a false bottom, perforated with holes through which the gelatinous solution passes as it is formed, a pipe carrying off the solution to the concentrating-pans. These pans are of wood lined with lead and of conical shape. The strength of the fluid passing into them is estimated by taking

out a little from time to time, and observing whether or not it solidifies on cooling. When duly concentrated and somewhat cooled it is run into moulds (and strained if necessary), where it becomes a jelly. In that state it is cut by wires and wet knives into slices which are laid on wire trays to dry hard. To improve their appearance the cakes, after drying, are sometimes dipped in clean cold water, and then dried again. The drying is best effected by the air and sun. The **Size** is the glue in the soft wet state before being concentrated, or it may be made separately from the residue of the materials which have been previously boiled up for glue. Ground alum dissolved in boiling water is sometimes added before the final process in order to make the size keep better. As a thin weak jelly it is used by painters, plasterers, and others; a better kind, made from the residue in making edible gelatine, being also used for sizing pictures. The **Best Glue** has a rich yellowish-brown colour; is uniformly translucent, clear, hard, glossy; is brittle, yielding a bright conchoidal surface. It does not turn moist in the air, is not affected even when kept for a considerable time in cold water, but dissolves on heating, the solution gelatinizing on cooling, even though there be not more than a hundredth part of glue present. Glue should be free from spots and cloudiness, also from waves. The colour is not a safe test, as it is sometimes imparted artificially. The *Manufacturer and Builder* gives the following test for glue:—A weighed piece of glue (say one-third of an ounce) is suspended in water for twenty-four hours, the temperature of which is not above 50° F. The colouring-material sinks, and the glue swells from the absorption of the water. The glue is then taken out and weighed; the greater the increase in weight the better the glue. If it then be dried perfectly and weighed again, the weight of the colouring-matter can be calculated from the difference between this and the original weight. **Bone Glue** is prepared from bones, which for the best qualities must be quite fresh when treated. After being carefully culled over by workmen, and broken by crushers, the bones are soaked in a weak solution of sulphuric acid. From the soaking-tanks the bones emerge white and apparently perfectly clean. They are then placed in steam tanks, where, after being subjected to a pressure of steam for several hours, a spigot is opened at the

Glue-tests.

bottom of the digester, and the liquid glue is drawn off. The grease of the bones, being lighter, is drawn off last and separated from the first product. The liquid glue is evaporated to a strength of 45 per cent gelatine, a portion of which is permitted to harden for commercial use as glue, and a part is refined and sold for gelatine. **Fish Glue** is made by boiling the heads, tails, and fins of fish at a temperature of 110° C. **Isinglass** is a kind of glue made from the air-bladders and sounds of sturgeons and other large fish, the organs named being cut into fine shreds, which, when dry, are whitish and semi-transparent. This, at least, is the appearance of Russian isinglass, which is accounted the best; Brazilian, which

Isinglass. is made from the air-bladder of a large fish caught in the River Amazon, is of reddish-brown hue. As isinglass is often adulterated with gelatine, it may be tested by trying a sample in cold water, in which gelatine swells and dissolves, while isinglass remains little affected; if the experiment be repeated with vinegar and water instead of water, the isinglass dissolves, while the gelatine does not.

Liquid Glue is made by mixing a solution of glue with acetic or nitric acid, in which it remains liquid but retains its power of cementing. The following is a recipe:—Break the glue in small fragments, and place them in a suitable glass vessel, and then pour whisky over them instead of water. Cork tightly and set aside for three or four days, when it will be ready for use without the necessity of melting. Thus prepared, the mixture will keep unaltered for years and will remain permanently liquid, except in very cold weather, when it may be found necessary to place the bottle in warm water for a little time before using. The vessel in which it is kept must, of course, be kept always tightly corked, to prevent the evaporation of the spirit. **Elastic Glue** is prepared by melting glue in water, adding the same weight of glycerine as of glue, thoroughly incorporating the materials and then evaporating. Various substances are mixed with glue to increase its adhesiveness; lime, white-lead, zinc-white, &c., being so employed. Powdered chalk added to common glue strengthens it. A **Vegetable Glue**, also known as **Sizings**, is obtained from the roots of plants such as the palmetto, which, when cut up and stewed at a great heat, yield a jelly-like substance of adhesive power.

Waterproof Glue may be made by softening ordinary glue in water and then dissolving it in linseed oil over a slow fire. Another kind is made by boiling common glue in skimmed milk, about a quart to the half-pound. When isinglass is similarly boiled in milk the product is **Chinese Cement**, frequently used for repairing crockery. A **strong glue** for inlaying and veneering is made by taking the best light-brown glue, free from clouds or streaks, dissolving it in water, and adding to every pint one half-gill of the best vinegar and one half-ounce of isinglass. Glue can be obtained by boiling linseed oil in an open vessel and shaking it repeatedly; by degrees the liquid thickens and assumes a glutinous consistency. **Marine Glue:** Dissolve 11 ozs. india-rubber in 17 pints of naphtha, add 22 ozs. shellac; heat carefully and stir well. Or suspend 10 lbs. of caoutchouc in a bag in a vessel containing Marine Glue
and Bird-lime. $13\frac{1}{2}$ gals. of refined petroleum, so that the bag is only half covered by the oil. Leave in a fairly warm place for ten to fourteen days. Melt in an iron vessel 20 lbs. of asphaltum, to which add the caoutchouc, slowly stirring all the time and keeping up the heat until the whole is perfectly mixed; after which pour into greased metal moulds and let it set into cakes. Jeffrey's Marine Glue, according to the inventor's patent, is prepared thus: A kilog. of good quality caoutchouc in small pieces is dissolved in 40 litres of coal naphtha. It is shaken from time to time until the caoutchouc has completely dissolved, and when the mixture has acquired a thick, creamy consistency (which takes place in ten or twelve days) some gum lac is added to it (or, better still, shellac) in the proportion of 2 parts by weight of lac to 1 of the solution. The mixture is afterwards poured into an iron copper, furnished underneath with a discharge-pipe, and is then placed on the fire. During the heating of the contents it is repeatedly stirred to prevent its becoming too thick. The compound thus obtained is the "caoutchouc" marine glue, which is drawn from the iron vessel whilst warm by means of the discharge-pipe, and is afterwards spread out on slabs to cool, after which it is broken up and reserved for use. A second kind of glue, without caoutchouc, can be prepared by mixing together 1 part by weight of crude naphtha and 2 parts (also by weight) of gum lac or, preferably, shellac,

and operating as above. **Translucid Glue** is an American substitute for marine glue, its composition being as follows:—8 decigrams of caoutchouc, 60 gr. of chloroform, and 15 gr. of mastic are taken; the two first ingredients are mixed together, and when the caoutchouc has dissolved, the mastic is added, leaving the whole to macerate for eight days, which should be a sufficient time for the mastic to dissolve cold. The amount of the caoutchouc should be increased if greater elasticity be required. It can then be applied cold with a brush. **Bird-lime** is made by boiling in water for some hours the inner bark of mistletoe or holly, mistletoe berries, elder shoots, &c., pouring off the thin water and leaving the thick portion exposed to the air for a week or two, after which it is beaten up into the sticky substance used for smearing twigs. A writer in one of the trade papers says: "Some holly branches are gathered in June or July, barked, and placed in boiling water; the second bark is then removed, which is beaten in a mortar until reduced to pulp; it is afterwards buried in manure for at least a fortnight, and then washed with water to free it from any woody matter which may remain. It now has the appearance of a glutinous substance, which is kept in water or oiled parchment. If it is found necessary to touch the glue, the hands should previously be either oiled or dipped in water."

As **Cement for Glass** the *Ironmonger* suggests: Shellac (bleached) 6 lbs., melted in 1 lb. of turpentine; dilute with oil of turps if too thick. Another recipe is: White-lead and mastic, 1 part each; litharge, 2; boiled linseed oil, 3. Heat and mix well, and use hot. A cement for affixing glass or steel letters to glass is thus prepared: Steep half an ounce of isinglass in soft water until fairly soft; then dissolve it in spirit and add to the solution two table-spoonfuls of strong liquid glue. Dissolve a tea-spoonful of small pieces of gum-mastic in spirits of wine until the solution is saturated. Add to the isinglass and glue a small piece of gum-ammoniacum, and then mix the two liquids over a slow fire. The cement must be kept in an airtight vessel, and when required it must be melted in hot water; but the water must not be allowed to mix with it. A cement for fixing glass tablets or letters outside shop windows is described in the chapter on WINDOWS (vol. i, p. 212).

Various Cements
and Pastes.

Law's *Manual* suggests for affixing glass letters a stiff solution of wood naphtha and marine glue; and for metal letters: Mix 6 parts of copal varnish, 2 parts liquid glue, 2 parts turpentine, and 2 parts linseed-oil varnish; keep in well-corked bottle. For **affixing labels to tins** dilute white of egg with half its bulk of water and apply with a brush; after the paper has been put on, a hot iron is passed over it to coagulate the albumen. Sometimes a thin coat of varnish (made by dissolving 1 part of common resin in 6 parts of methylated spirit) is applied to the tin before labelling, to prevent rust. By successive layers of the white of egg and paper, as above, waterproof boxes or packages may be formed. Labels for glass are made to adhere better, it is stated, if a small quantity of a solution of sulphate of aluminium is added to the gum or paste used. A little glycerine or acetic acid is sometimes added to **liquid gum** made by dissolving gum-arabic, or gum-arabic and gum-tragacanth, in water. For a **paste that will keep**, the following recipe is given by *The Grocer*:—Dissolve a tea-spoonful of alum in a quart of water. When cold, stir in flour, to give it the consistency of thick cream, being particular to beat up all the lumps. Stir in also as much powdered resin as will lie on a sixpence, and throw in half a dozen cloves, to give it a pleasant odour. Have on the fire, in a large sauce-pan, a gill of boiling water; pour the flour mixture into it, stirring well all the time. In a few minutes it will be of the consistency of treacle. Pour it into an earthen or china vessel. Let it cool; lay a cover on, and put in a cool place. When needed for use take out a portion and soften it with warm water. **Ordinary Paste** is made by stirring up flour with cold water until all lumps are broken, then adding boiling water; a little alum assists the keeping, and a little sugar, honey, or glycerine is sometimes added. The Chinese and Japanese use paste or cement made from the flour of rice or sago. The rice-flour is well mixed with water and then simmered gently over a clear fire.

For **mending india-rubber articles**, such as rubber shoes, balls, hose, tyres, &c., the *Deutsche Chemische Wochenschrift* recommends the following:—Articles are first freed of adhering foreign particles and thoroughly dried. For mending
India-rubber. Varnish, as, for instance, on rubber shoes, is removed by means of emery paper or a file, and the part thus treated is well

rubbed over with benzine. The edges of the hole are then painted over with a solution of Para caoutchouc in benzine, a fitting strip of natural rubber being laid over it and a solution consisting of 4 parts of benzine, 3 of carbon sulphide, and 0.18 part of sulphur chloride is applied to the edges by means of some cotton-wool tied to a wooden holder, this solution serving to vulcanize and to increase the resistance of the rubber. The joined parts have, of course, to be well pressed together.

Fire-lighters are commonly composed of wood or saw-dust and melted resin, a little tallow or tar being sometimes added.

Matches, the stems of which are preferably white or yellow pine-wood, are made by dipping these "splints" (which are previously arranged in a frame) in a shallow pan containing paraffin, and then into another shallow pan containing the igniting composition.

Matches. This consists essentially of an emulsion of phosphorus in a solution of gum or glue, combined with a quantity of chlorate of potash, red-lead, or nitrate of lead, to increase the combustibility, and some colouring-matter, as cinnabar, smalt, &c. The frames are then placed in a heated compartment to dry the tips. The use of amorphous instead of common phosphorus has done away with the poisoning which used to be a common disease amongst match-makers. **Safety Matches**, invented in Sweden in 1855, and patented in this country, depend on a division of the igniting composition into two parts, one of which is placed on the match, the other on the box. In the ordinary match all the ingredients are put on the splint, and any friction ignites them. In the safety match the composition of chlorate and bichromate of potash, red-lead, and sulphide of antimony is placed on the splint, while the friction-paper is coated with a mixture of amorphous phosphorus and sulphide of antimony. In **Vestas** cotton threads coated with stearine and paraffin form the wick; and the ordinary igniting composition is placed on the tip. **Fusees** are made of thick paper soaked in a solution of nitre and bichromate of potash, and tipped with the usual composition. The head of a **Vesuvian** is made by repeated dipping in a mixture of charcoal, nitre, scented bark, ground glass, and gum, with a tip of the igniting composition. A German law of 1903 forbids the use of white phosphorus, and a raw material of red phosphorus and "chlorsaures kali" is employed.

MR. WILLIAM REED was the founder, and is still the chief proprietor, of *The Grocer and Oil Trade Review*. When he started the paper in 1861, *The Grocer* was almost alone in trade journalism as an independent newspaper; this important trade, like others, having been until then dependent for its news upon the circulars of private business firms. The honourable independence of *The Grocer* has been maintained up to this day, and has undoubtedly been one of the chief factors in gaining for the paper the enviable influence it now enjoys throughout the trades it represents. As Wines, Beer, and Tobacco are dealt with in the present volume, it may be of interest to mention that Mr. Reed was also the founder of the *Wine Trade Review*, the *Brewers' Journal*, and the *Tobacco Trade Review*, all of which are prosperous journals. Of late years Mr. Reed has delegated the general control of his journals to his son, Mr. Leicester Morgan Reed.

SIR JAMES RECKITT, Bart., D.L., J.P., is chairman of Reckitt & Sons, Limited, Hull. He was born in 1833, and educated at Ackworth School, the principal public school of the Society of Friends. He is chiefly known from his long and prosperous business career, his interest in philanthropic and educational work, and his gifts of free library, orphan home, and convalescent home to Hull. Sir James is an art collector, and has a fine collection of modern pictures and other works of art.

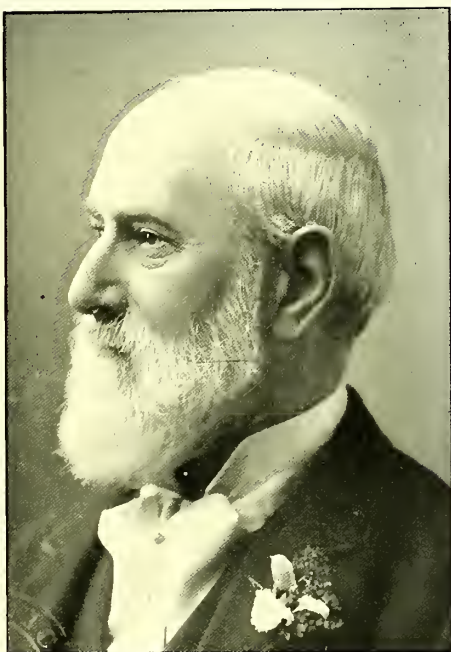
MR. WILLIAM GEORGE WATSON, chairman of the Maypole Dairy Company, Limited, and of the Danish Bacon Agency, Limited, was born in Warwickshire in 1861. He was apprenticed with Mr. George Jackson in Birmingham at the shop originally owned by his relative, Mr. James Watson, M.P. In 1887 he founded the Maypole Dairy Company, in conjunction with his two brothers. Mr. Watson was also interested in Mr. Jackson's business for a few years, and eventually the two businesses were amalgamated, and the Maypole Dairy Company, Limited, formed in 1898. He is a great believer in the advantages of getting the staff and employees interested in the profits and success of the businesses with which he is connected.

MR. W. T. CROFT, grocer and provision merchant, Rishton, has been connected with the grocery trade since 1868. He joined the Accrington and District Grocers' Association at its formation, and was appointed president in 1899. In November, 1904, he was unanimously elected president of the Northern Council of Grocers' Associations.

LEADING MEMBERS OF THE TRADE



WILLIAM REED



SIR JAMES RECKITT, BART., J.P., D.L.



WILLIAM GEORGE WATSON



W. T. CROFT

Amongst **Laundry Requisites**, we have dealt with soaps in a foregoing chapter. Starch and starch polishes have also been referred to.

Blues for laundry use are made from various substances, such as indigo, indigo extract, ultramarine, smalts, or cobalt blue, Prussian blue, and various aniline blues. Ultramarine—the artificial kind, not that made from lapis lazuli—is ^{Laundry Blue.} perhaps used more than anything else for the purpose. Of artificial ultramarine there are two chief kinds, sulphate and soda; it is the soda ultramarine which is best for laundry blue, as heat does not affect it. The ultramarine must be of fine quality and quite free from grittiness. Powder blues are in some instances merely the pure ultramarine; while in others they are made by mixing with the ultramarine a suitable quantity of soda or borax. The ultramarine, carbonate of soda, and kaolin or borax are made into a paste and ground finely; then redried. A good deal of laundry blue is simply starch coloured with Parisian blue, these being made into a paste to which is added a little indigo and a solution of gum-arabic, water being put in until the mass can be well mixed up; the pasty mass being then dried partly until it can be cut into blocks, after which the drying is completed and the blocks polished with a little blue powder in a revolving drum. Prussian blue of the soluble kind—not Chinese blue—gives a satisfactory tint for laundry purposes. The aniline blues are not sufficiently soluble for block blue, but in the form of a solution of $1\frac{1}{2}$ oz. or 2 ozs. to the gallon of water they are much employed as **Liquid Blue**, the tints chiefly used being Keton, Blackley, Capri, Cresyl, Indigo blue S.G.N., Formyl violet, and Cyanole. Liquid blue may also be made by dissolving indigo carmine in water and adding a little gum-arabic; or by dissolving in a quart of water $1\frac{1}{2}$ oz. Prussian blue and 6 drs. oxalic acid.

Washing Powders, Soap Powders, and similar preparations are commonly mixtures of powdered carbonate of soda (see below) with powdered yellow or curd soap, and a little powdered borax, pearl ash, or common salt. Soapstone has nothing to do with the laundry; it is dealt with in the paragraph on earths. **Soap Balls** are made by melting common soap and adding starch to render it ballable. **Soap Wort** (*Saponaria officinalis*) is a common herb used in various countries for **Wool soap**. In Syria it is used

extensively for washing woollen stuffs, as it does not shrink them. It is also successfully used for washing silks and fresh and fast-coloured cotton fabrics, as it does not injure the colours but rather prevents fading. "Shursh-halawy" is the Arab name; but the plant is found under British hedges and in watery meadows.

Washing Soda is chemically one molecule of carbonate of soda together with ten molecules of water of crystallization. The method of preparation is that carbonate of soda (or soda ash) is dissolved in warm water, filtered, and allowed to stand in pans to cool and crystallize for about ten days; the mother liquor is then run off and the crystal dried and packed. Pure soda ash is sometimes purchased by small manufacturers and made into **Soda Crystals**, which are often adulterated by an admixture of Glauber salts. In some cases the so-called soda crystals consist entirely of Glauber salts, which are absolutely of no use for domestic purposes and altogether ineffectual for softening water. Glauber salt is sulphate of soda with ten molecules of water. Soda ash for soda crystal making sold recently in London at £5, 10s. per ton, whereas sulphate of soda cost only about £1, 14s. per ton. There are two methods by which the adulteration can be carried out. Firstly, soda ash and sulphate of soda can be dissolved together and crystallized in pans as above described, or the two finished products can be bought and mixed. In the first case each separate crystal contains both carbonate and sulphate of soda; in the latter case it will be possible to pick out from a sample some crystals of pure washing soda and other crystals of pure Glauber salts. The genuine article very often passes in London under the name of "Scotch Soda" and the adulterated Glauber salts under the name of "English Soda". Sulphate of soda or Glauber salts in the adulterated mixture has no effect whatever in softening water, but to the eye no difference can be detected between the two substances. In the genuine article there is generally about 1 per cent of sulphate of soda, which is always added to make the crystal harder. There is in the trade a recognized standard of washing soda, and anyone asking for soda would expect to get an article efficacious for washing purposes, whereas adulterated soda may be entirely useless for such purpose. The detection, however, of adulterated soda is generally speaking impossible to

the ordinary lay buyer, and requires analysis. It should be noted that commercial soda crystals are not absolutely pure; they usually contain from $\frac{1}{2}$ to 1 per cent of sodium sulphate and up to $\frac{1}{2}$ per cent of chloride; it is only the gross adulteration with the first of these that is complained of. The chemist's method of detecting the adulteration is by dissolving a few grains of the suspected soda in an ounce of water, acidifying with hydrochloric acid, and adding a few drops of a solution of barium chloride or calcic chloride. The precipitate thrown down should be slight unless there is adulteration. At the beginning of 1904 a number of retailers were convicted for selling such soda, the largest firm of manufacturers having for some time previously advertised their willingness to analyse gratuitously any samples which the retailers suspected were not genuine.

Sponges are the skeletons of an animal found in the waters of the Mediterranean amongst the Greek and Turkish islands, Cyprus, and the coast of Asiatic Turkey, Syria, and Egypt, but not on the coasts of Spain, France, and Italy. Large quantities of a cheaper kind are also imported from the West Indies, Cuba, the coasts of Florida and Mexico, and British Honduras. In the tideless waters of the Mediterranean they are fished by divers, and when brought up out of the sea do not at all resemble the sponge of commerce. The sponge is then surrounded by an outer skin of unorganized membrane, and when cut open looks like raw beef, intersected with canals and cavities which are filled with a grayish-brown treacly substance called sarcode, or, as the fishermen say, the "milk". This sarcode, and not the sponge as we know it, is the only part of the sponge that is alive. The organic part has to be at once removed, but this process is supplemented by more careful bleaching at the hands of the sponge merchant, the marine impurities and fragments of rock and shell being extracted by careful trimming and chemical treatment which also improves the colour. A quarter of a century or more ago a diving apparatus called a "skafander" was introduced, and with this apparatus the sponge-diver could spend an hour under water at a depth of from 10 to 15 fathoms. But experience showed that this method and dredging were too severe a tax upon the

sponge banks, whilst the skafander was also very injurious to the fishermen themselves; for which reasons the use of the diving-bell was prohibited in 1902 by the Egyptian Government, following similar action by Samos, Crete, Cyprus, and Tunis. In the Levant the primitive method of diving is that most popular, with no other apparatus than a slab of stone as a sinker and a cord to communicate with the surface. The diver, on reaching the bottom, hastily snatches up as many good sponges as possible, puts them in a net carried round his neck, and then tugs at his cord to be drawn up. Harpooning is also employed, and for viewing the bottom of the sea the harpoonist uses a wooden or zinc cone, like a bucket, with a glass bottom. Submerging this water glass partly, he can study the bottom even at 30 fathoms depth. All through the Mediterranean, except the western half of the northern shore, three species of sponges are found at a depth of 2 to 100 fathoms, namely, *Euspongia officinalis*, *Hippospongia equina*, and *Euspongia zimocca*. In 1901 the prices paid (in piastres, 150 to £1) were: Sponges from Mandrouka and Bengazi (coast of Africa), always sold by piece, for toilet sponges from 12 to 16 pias. per piece, bath sponges from 7 to 11 pias., and for zimokes or coarse sponges from 1 to 1½ pias. Sponges fished at Cyprus, Crete, the coast of Syria, Caramania, Rhodes, and other Turkish islands are always sold by weight, the prices varying according to quality; prices paid for toilet sponges from 500 to 800 pias., and for bath sponges from 170 to 240 pias. per oke. For Turkey sponges Smyrna and Trieste were formerly the head-quarters; the trade is now centred in London and the Piræus, to which Tripoli, Latakia (finest Syrian sponges), Cyprus, Crete, and other sponge fisheries ship direct. The market value of sponges depending on the fineness of the pores, the larger and coarser product of the Bahamas brings less money, and is known as the bath sponge. For restoring sponges a mixture of glycerine and water (1 to 8) is used; in this they are dipped, then squeezed out and dried. Soaking in salt and water, or a weak solution of soda, is also found useful for this purpose.

Twine and String may complete our collection of "lines" for this chapter—although mats, rugs, clothes-pegs, wash-leather gloves, knife-boards, opening knives, wood taps, corn sacks, nose-bags, confetti paper, and many another oddment might be

recalled, and **Corks** might have a section to themselves to enlighten the reader respecting "bungs" and "shives" (wider than long) of wood and cork, and the smaller "daffies" and "vials" used by the chemist. Of the varieties of **Cordage** the name is legion, for we might start with the largest cable and go down through shipping and yacht cordage; cod and conger lines; garden and hammock lines; twines for packing and sewing; ropes for every purpose of trade, manufacture, and shipping; and string of all kinds for the warehouse, shop, and home. Rope is the term commonly applied to twisted hempen cord an inch or more in thickness; cord is the thinner; twines are two-ply, three-ply, so many yards to the pound; and string needs no description. An ordinary list will include string of all hemp, Dutch, Italian, whip-cord, and so on; jute twine and cord, cotton twine; box cord in coils and balls; clothes-lines, mill-spun, in coils and balls, also white cotton clothes-line in hanks, sash-lines; blind-cord in green, white, or red at per gross yards, or glacé cord in half-gross boxes. Ropes are made from a large variety of fibres, chiefly Russian hemp, manila, sisal, and New Zealand fibre and coir; the raw material coming from America, Russia, Italy, India, and the Philippines. In ropes and twines, strength and an even uniformity of make are the chief qualities necessary. Cords made from harsh or extra fibrous material are scoured, sized, and polished; while sash-lines, which have to stand great friction, are made in special plaiting-machines. Note that the weights of twine bought wholesale often need checking.

8. WINES AND SPIRITS

The various liquids used as beverages are sharply distinguished into two great classes, according to whether they do or do not contain alcohol. The alcoholic liquors comprise, broadly speaking, Wines, Spirits, and Beers; those which, at least ostensibly, are free from alcohol include, for present purposes, the various mineral waters, aerated drinks, herb beers, and similar preparations. We deal first with the more important group into which alcohol enters as an essential constituent, the **Alcoholic Liquors**.

Whether we deal with wines, or spirits, or beers, there are certain general terms and expressions in use—such as “proof spirit”, “obscuration”, “over proof”, “under proof”,
 Alcohol. “absolute alcohol”, and so on—which are common to all alcoholic liquors; and it will therefore be expedient at the outset to devote some space to a short description of alcohol itself and to an explanation of the expressions in question.

Alcohol, the substance to which all ordinary intoxicants owe their stimulant properties, is met with in an approximately pure form in “Plain British Spirits”, and it usually exists, though in a much diluted state, even in such innocuous articles as ginger-beer. But, occur where it may in commercial beverages, it is always formed by the fermentation of sugar. Sometimes the sugar is already present in the ingredients used—as, for instance, in the manufacture of wine, where the grape-juice owes its sweetness and its power of fermentation to the grape-sugar which it contains. In other cases the sugar does not pre-exist in the materials taken, but is formed from them in the course of the operations. Barley, maize, rice, potatoes, &c., all contain a considerable amount of starch; this starch is the source of the sugar, and eventually of the alcohol produced from it.

In making either beer or spirits the preliminary processes are essentially similar. The grain or other starchy ingredients are “mashed” with hot water in order to soften and burst the envelopes of the starch-granules. A certain proportion of malt is mixed with the other materials, and in malt there is a ferment termed “diastase”. This diastase possesses the power of attacking the liberated starch and converting it into sugar. At the end of the mashing process, therefore, the liquor or “wort” drawn off from the grains is substantially a solution of sugar (“maltose sugar”) with a quantity of albuminous and dextrinous matters derived from the grain at the same time. To this “sweet wort” yeast is added. The yeast-plant is a fungus which has the property of decomposing certain varieties of sugar, including the maltose sugar of wort; the plant grows at the expense of the sugar, and the products into which the latter is decomposed during the process are chiefly alcohol and carbonic-acid gas. In large distilleries a great quantity of carbonic acid is evolved from the fermenting liquid, and it is the practice with some firms

(Guinness's, for instance) to collect the gas as it rises, purify it, compress it into steel cylinders, and sell it in this form for refrigerating purposes.

Up to this point the process is substantially the same whether spirits or beer are being manufactured. We shall presently return to the question of beer; but for the moment we are concerned with the production of alcohol, which is best exemplified by the case of plain spirits.

The fermented liquid or "wash", if required for the manufacture of spirits, is run off into a still, and heated to boiling. Alcohol is much more readily volatile than water, its boiling-point being 173° F. as against the 212° F. of water. Consequently the portion of the "wash" which first distils over consists largely of vapour of alcohol, mixed, however, with a certain quantity of water and some fusel-oil impurities. These mixed vapours are condensed (if an ordinary "pot" still is being used) by being passed through a "worm" or spiral tube kept cold with water, and the resulting impure alcohol is subsequently purified by a repetition of the distillation. This second process is technically termed "rectification", and the product is "rectified spirit" or "spirits of wine".

Even highly-rectified spirits of wine, however, still contains from 5 to 10 per cent of water. To obtain what is termed "absolute" alcohol—that is, alcohol perfectly free from water—the strong spirit must be mixed with some sub-
"Absolute"
and
"Proof".
 stance, such as burnt lime, which absorbs the water from the alcohol; and then, on distilling off the spirituous liquid, the pure anhydrous alcohol is obtained, the lime and water being left behind in the still. Absolute alcohol is a colourless, inflammable liquid, with a pleasant spirituous odour. It is much lighter than water, and on this fact depends the method which is almost always employed for determining the quantity of alcohol contained in the various intoxicating liquors. If a bottle, which holds exactly 1000 grains' weight of water at 60° F., be filled with absolute alcohol at the same temperature, the weight of the alcohol will be found to be only 794 grains. This is what is meant by saying that the "specific gravity" of absolute alcohol at 60° F. is 0.794 —*i.e.* $794 \div 1000$.

The duties payable on alcoholic liquids are always calculated

upon the quantity of "**proof spirit**" which they contain, or are capable of yielding. Other fiscal and adulteration regulations also take "proof spirit" as the standard. Thus brandy, Strength of Spirits. whisky, and rum must not be sold at a lower alcoholic strength than 25° "under proof", nor gin at less than 35° .

"Proof spirit" is a mixture of alcohol and water containing, in every 100 parts by weight, 49.24 parts of absolute alcohol. It has a specific gravity of 0.9198 at 60° F. The term "proof" arose from a rough test formerly applied by revenue officers to spirits. The test consisted in moistening gunpowder with the spirits and ascertaining if the powder would then burn. More than a certain quantity of water in the spirit would prevent the ignition, and the liquor was then considered to be below "proof".

"**Over proof**" spirit contains more than 49.24 per cent of absolute alcohol; "**under proof**" contains less than this quantity. If an alcoholic liquor is, say, 20° over proof ("o. p."), then, to reduce it to proof strength, 20 gallons of water are required to be added to each 100 gallons of the liquor, giving 120 gallons of *proof* spirit. If the alcoholic liquor is 20° *under* proof ("u. p."), then it contains, in every 100 gallons, 80 gallons of proof spirit and 20 gallons of water. In these two cases, therefore, duty would be levied at the rate of 120 gallons and 80 gallons respectively for every 100 gallons of the alcoholic liquor in question. The present duty on British spirits is 11s. per proof gallon, on brandy and rum 11s. 4d., and on other foreign spirits 11s. 5d.

It may be asked how the proportion of alcohol in wines, spirits, and beers is ascertained. The more alcohol there is in a liquid, the lighter that liquid is. Consequently, How Strength is ascertained. by finding the "specific gravities" of liquors containing alcohol, and comparing them with tables showing the corresponding percentages of spirit, the alcoholic strength of the liquors is found. The specific gravity is taken either with a bottle or by immersing a suitable hydrometer in the liquid.

In the case of whisky, unsweetened gin, and some wines, the "specific gravity" test can, without appreciable error, be applied to the liquor just as it is. But rum, brandy, sweetened gin, certain wines, and all beers, porters, ciders, &c., contain sugary and other matters which make the liquid heavier than it would otherwise be. To this extent, therefore, they mask or "obscure"

the indications of the specific gravity. Such liquors require to be distilled before testing, in order to separate the alcohol and water from the sugar and other solids. The specific gravity is then taken on the distillate—*i.e.* on the mixed alcohol and water, now free from sugar. “Obscuration”, then, denotes the difference between the *apparent* percentage of proof spirit shown when a liquor is tested direct, and the *real* percentage as given when the sample is tested after distillation. Apparent strength + obscuration = real strength. Thus with a sample of spirits:—

Apparent strength,	...	...	...	...	25° o.p.
Obscuration,	...	...	...	...	5° „
					<hr/>
Real strength,	...	...	...	...	30° o.p.

The difference sometimes represents a considerable amount of duty. As already mentioned, it is due to sweetening and colouring ingredients making the sample heavier, and thus neutralizing or “obscuring” the lightening effect of a corresponding quantity of alcohol.

Strictly speaking, **wine** is the pure fermented juice of the grape. But, in practice, pure wine may receive certain additions essential to the keeping or character of the liquid; thus champagnes may be sugared before fermentation, and Wines. fortified with cognac after. “**British Wines**” are so called from being prepared in a similar manner to true wine, but the material used is, of course, not the juice of fresh grapes.

The grape-vine, *Vitis vinifera*, is extensively grown for wine-making in France, in the middle and south of Europe, in Algeria, South Africa, Australia, California, in the southern districts of North America, in South America, and in the Atlantic islands. It flourishes along the borders of rivers, but nearly all the best wines come from hill-sides. Most of the French vineyards have been replanted with American stocks, with the French varieties grafted upon them.

As regards **vintage** and fermentation, the procedure differs somewhat, according to whether white or red wine is to be produced. For Burgundy wines the grapes are gathered when they give the deepest colour, whereas in the case of champagne they are vintaged before becoming fully ripe. It may perhaps be necessary to mention that the difference in colour between red wines and

white wines is not due, as is often supposed, to these wines being respectively produced from black grapes and white grapes. From either variety white wine can be, and is, manufactured. The colour of red wines is obtained by allowing the juice to ferment a little and then mixing it with the skins of the grapes ("marc"), from which it dissolves the colouring-matter; whereas in the case of white wines the juice is separated from the marc without delay, and before it has had time to ferment and dissolve the colour.

After spoilt and unripe fruit has been removed, the grapes are first crushed and then pressed to obtain the juice or "must".

How Wine is made. For red wines the stalks are removed before crushing by passing the grapes through a series of sieves, because to obtain the colour of these wines the juice is kept in contact with the marc (skins) for some time, and if the stalks were not removed a quantity of tannin and other astringent principles would be dissolved from them, much to the detriment of the final product. With white wines the grapes are generally crushed with the stalks, the "must" being in this case drawn off almost at once. The crushing is done either by treading in vats or by passing the grapes through a machine with grooved rollers. For champagnes the grapes are pressed direct, without preliminary crushing.

The must having been drawn off as far as possible from the marc of crushed skins, the latter—or the whole grapes in the case of champagne—are pressed to complete the extraction of the must. Screw-presses were formerly used for this, but centrifugal machines have now displaced the wine-press in many places.

Fermenting.—Red wines, which have to be stirred up with the grape-skins during or after fermentation, are usually fermented in open vats, white wines in casks. The operation takes about a fortnight. After this the young wine is racked off, its sediment allowed to deposit, and the wine is then again racked into fresh casks to mature. During this maturation a slow after-fermentation takes place, a crust of "argol" or crude cream of tartar separates from the wine, and other changes occur, resulting in the formation of certain "ethers" or "esters", upon which the "bouquet" and flavour of the product largely depend. To some extent, and perhaps mainly, the characteristic bouquet of wine from a particular

district is due, it is believed, to the special properties of the yeast used in that district. The same must has been made to yield different qualities of wine by fermenting it with appropriately-different kinds of yeast.

From what has been said under "Alcohol", it will be understood that the principal change which takes place in the fermentation of must is the conversion of the grape-sugar into alcohol. The smaller changes, besides producing the "ethers" above referred to, result in the formation of small quantities of various acids and of glycerine, and in the deposition of albuminous matters, argol, and mucus. This may be shown as follows:—

In the Must.	In the Wine.
Sugar, 12 to 24 per cent, chiefly dextrose.	Alcohol, 6 to 14 per cent. Some residual sugar, chiefly levulose.
Gum, albuminous matters, vegetable mucus, tannin, and argol.	Glycerine, 0.5 to 1.5 per cent. Succinic, acetic, and tartaric acids, with residual argol. Ethers.

In completely fermented wines the grape-sugar is almost wholly converted into alcohol, and hence Burgundy, Moselle, Rhenish, Carlowitz, and claret, which are all well fermented, contain little or no sugar. Sweet wines, such as port and sherry, contain quite a notable quantity of unfermented sugar. A "dry" wine contains less sugar than a "full-bodied" wine. To prevent the sugar in sweet wines from undergoing subsequent fermentation, and so altering the character of the wine, it is necessary to fortify the wine by the addition of cognac, plain spirit, or a liqueur. Hence it is that, although in natural wines the amount of alcohol rarely or never exceeds 13 or 14 per cent, in fortified wines it may be as high as 22 per cent or more.

A syrup of cane-sugar, or sometimes of dextrose-sugar made from potatoes, is often added to the must before fermentation in order to increase the yield of wine, or, in the case of champagne, to give it body and keep it sparkling and free from acetification. The must of bad years, especially, is treated with syrup, because such must is deficient in grape-sugar and contains an excess of acid. Much wine, too, of a useful but of course inferior quality, is manufactured by mixing a sugar-syrup with a proportion of marc, and allowing the mixture to ferment. The "plastering" of wines consists in the addition

Sugaring,
Plastering,
and Colouring.

of gypsum (plaster of Paris) to the must, either before or after fermentation. It gives the wine a fiery-red appearance, makes the fermentation more rapid and complete, and also clarifies it from suspended albuminous matter. Spanish, Italian, and Southern France wines are those most frequently "plastered". There has been a good deal of discussion about the plastering of wines, and a strong prejudice exists against such articles, which, it must be admitted, may very reasonably be looked upon as adulterated products. But it is only fair to say that as regards its alleged baneful effects very little trustworthy evidence has been produced. Artificial colouring-matters are often used to improve the appearance of wines. Rosaniline, elderberry, and logwood are the chief colours employed.

Coming now to the different varieties of wines, it will be convenient to deal with the chief sorts in alphabetical order:—

Burgundies.—These may be either red or white, sparkling or still. They are produced in the French departments of Côte-d'Or, Yonne, and Saône-et-Loire, and the best growths are classified into three groups of red wines and two of white wines, thus:—

Red.—Class I.—Romanée-Conti, Chambertin, Clos de Vougeot, Richbourg la Tache. Class II.—Musigny, Romanée St. Vivant, Le Clos St. Georges, Le Corton, Les Bonnes Mares, Le Clos du Tart. Class III.—Arvelets, Rugiens, Beaumont, Cailles, Cras-Murge, Boudots, Perrets, Pruliers, Thaurey, Vaucrains, Clos Margeot, and some half-dozen others.

White.—Class I.—Montrachet. Class II.—Chevalier Montrachet, Batard Montrachet, Combettes, Genevrières, Goutte d'Or, and Charlemagne.

Other important wines of the Burgundy district are:—**Chablis**, a white still wine produced in Yonne; **Mâcon**, a still red wine similar to Burgundy, but of lighter colour, less body, and without the Burgundy bouquet, produced in the Saône-et-Loire department; also **Beaujolais**, **Pommard**, **Volnay**, and **Beaune**, still red wines; and **Château Poncie**, a sparkling white wine of the Burgundy class.

Champagnes.—The best varieties of champagnes are produced in the French departments of Marne and Haut-Marne, and the principal centres of the trade are at Avize, Ay, Châlons, Dizy,

Epernay, and Rheims. Champagne is the chief representative of the sparkling wines, all of which owe their "fizzing" or effervescence to carbonic-acid gas. Both white and red grapes are used in the manufacture, and are gathered about the beginning of October. The young wine, obtained as already described, is allowed to ferment until the winter, when it is racked and allowed to settle for a month, then again racked, and fined. It is then mixed with some old wine, and if necessary cane-sugar is added. After bottling, the wine is binned for a few weeks in the warehouse, the bottles being laid on their sides; then when effervescence has commenced, the bottles are lowered to the deep cellars cut out from the chalk at a depth of 100 feet. In these cellars the wine lies for three or four years to mature. As the effervescence causes a deposit in the wine, it is necessary to remove the stacks several times from place to place, and to shake the bottles in order to prevent the adhesion of this deposit to the side of the bottle. When the wine has been in bottle three or more years, the delicate process begins of shifting the sediment from the side of the bottle to the cork, without disturbing the brilliancy of the wine. Inclined wooden slabs or desks are used for this work, the bottles being placed slantingly neck downwards into holes shaped to allow change of position. Each bottle is dexterously shaken and turned every day for about two months. By the time this operation is completed, the bottle is standing practically on its head, and the deposit has firmly attached itself to the cork. The latter is then carefully removed, carrying the sediment with it, and a small quantity of a liqueur made of wine, sugar, and cognac is added to the contents of the bottle, which is then filled up, corked, and wired. By this means the wine is obtained free from sediment, and the slow secondary fermentation of the sugar ensures the production of sufficient carbonic-acid gas to make the liquid effervesce on opening the bottle. On the Continent the sweeter kinds of champagne are usually drunk, and the "dry" varieties, containing but little sugar, are chiefly exported to this country.

The various brands of champagnes are so well known as hardly to require mention. They include Ayala, Bollinger, Clicquot, Deutz and Geldermann, Desbordes, Giesler, Goulet, Heidsieck (Charles and Piper), Irroy, Jacquesson, Champagnes. Lanson, Louis Chalons, Moët and Chandon, Mumm, Perinet,

Perrier Jouet, Pommery, Roederer, Ruinart, St. Marceaux, and Wachter.

In connection with the champagne wines it is interesting to note that for some years past the demand for clarets has greatly diminished in favour of the wines of Champagne, and this diminution has seriously affected the wine industry in the Bordeaux district. Several proprietors in the Médoc have, however, now commenced the production of sparkling wines by the same process as champagne is made, and have thus started what is practically a new industry for the Médoc district.

The fermentation and maturing of the sparkling wines have to be carried out from first to last at a perfectly uniform temperature, and for this reason the cellars in the Champagne district are dug out often to a great depth in the chalk. At Bourg, on the right bank of the Gironde, opposite the Médoc vineyards, there are Oolitic cliffs whence the stone has for centuries been quarried out in long galleries, and these have now been adapted for the cool cellars required in the production of the sparkling wines.

Wines of the **claret** type are chiefly produced in the French district of the Gironde, the Médoc being the principal region.

The grapes chiefly grown for red wine are known as

Clarets. *Carbenet Sauvignon, Franc Carbenet, Malbec, and Merlot,* and the vintage is in the latter part of September and the first week or so in October. Four main groups of wines are recognized, the *Paysan, Artisan, Bourgeois,* and *Fine growths*, and the last of these is further divided into “**classed growths**”, which supply our “château” and old bottled clarets. Of the “classed growths” five qualities are recognized, and the wines are, with a few exceptions, named after the various châteaux, the name of the commune being often added in brackets. The following are the five subdivisions of the classed growths:—

First Growths.—Châteaux: Lafite (*Pauillac*); Margaux (*Margaux*); Latour (*Pauillac*); and Haut-Brion (*Pessac*).

Second Growths.—Châteaux: Mouton-Rothschild (*Pauillac*); Rauzan-Ségla and Rauzan-Gassies (*Margaux*); Léoville-Lascases, Léoville - Poyferré and Léoville - Barton (*St. Julien*); Gruaud - Larose - Bethmann, and Gruaud - Larose - Sarget (*St. Julien*); Durfort - Vivens and Lascombes (*Margaux*); Brane - Cantenac (*Cantenac*); Pichon-Longueville and Pichon-Longueville-Lalande

(*Pauillac*); and Ducru-Beaucaillon (*St. Julien*); also Cos d'Estournel and Château Montrose (*St. Estèphe*).

Third Growths.—Châteaux: Kirwan, D'Issan, Brown-Cantenac, and Palmer (*Cantenac*); Lagrange and Langoa (*St. Julien*); Malescot, Desmirail, Ferrière, and Becker (*Margaux*); Giscours (*Labarde*); La Lagune (*Ludon*) and Calon-Ségur (*St. Estèphe*).

Fourth Growths.—Châteaux: St. Pierre, Branaire-Duluc, Talbot, and Beychevelle (*St. Julien*); Duhart-Milon (*Pauillac*); Poujet (*Cantenac*); La Tour Carnet (*St. Laurent*); Rochet (*St. Estèphe*). Le Prieuré (*Cantenac*) and Marquis de Therme (*Margaux*).

Fifth Growths.—Châteaux: Pontet Canet, Batailley, Grand-Puy-Lacoste, Ducasse-Grand-Puy, Lynch-Bages, Lynch-Moussas, Mouton d'Armailhaq, Haut-Bages, Pedesclaux, Clerc-Milon, and Croizet-Bages (*Pauillac*); Dauzac (*Labarde*); Le Tertre (*Arsac*); Belgrave and Camensac (*St. Laurent*); Cos-Labory (*St. Estèphe*); Cantemerle (*Macau*).

The wines of the best growths are chiefly exported to this country; not much of this class is drunk in France.

Germany is the **hock**-growing country *par excellence*, the Rhine district in the neighbourhood of Mainz (which town is the centre of the hock trade) producing the celebrated Grafenberg, Johannisberg, Rauenthaler, and Rüdesheimer wines. The Hocks. principal grape cultivated is the Riesling. From Hesse come the Liebfraumilch and the Niersteiner, wines enjoying considerable popularity.

Among the chief still hocks we may mention Bodenthaler, Hattenheimer, Hochheimer, Laubenheimer, Liebfraumilch, Marcobrunner, Niersteiner, Rauenthaler, Rüdesheimer, Steinwein, and Steinberger. Favourite sparkling varieties are Muller's, Johannisberger, Liebfraumilch, and Kaiser Blume.

Moselles are excellent wines, both still and sparkling, and of characteristic flavour and aroma, produced in the Moselle district of Germany. Brauneberger, Berncasteler, Schwarzberger, Stephansberger, and Zeltinger are some of the best-known varieties.

Bucellas Hock is a Portuguese white wine, obtained from the Riesling grape.

Madeiras.—At one time a relatively large quantity of wine was imported from Madeira, Grand Canary, and Teneriffe, but owing

to the attacks of the *oidium* fungus the production has declined a good deal. *Bual*, *Malmsey*, *Sercial*, and *Tinta* are some of the best-known special brands of Madeira. In the manufacture of the wine it is usually warmed for a short time to a temperature of about 80°–100° F., and it is thought that this imparts to Madeira its characteristic flavour. In former times the same thing was obtained by the much more cumbersome method of sending the wine on a voyage to the Indies.

Bual is a rich and delicate wine made from a round, straw-coloured grape. *Malmsey* is a light-coloured wine, made from a large oval grape of a rich gold colour when ripe. The wine is of a very rich character, and has long been esteemed as the most valuable of the Madeiras. *Sercial* is a dry, light-coloured quality; and *Tinta* is so called from its dark colour, resembling that of Burgundy.

Marsala is a Sicilian wine, obtained from selected and thoroughly ripe grapes of the Madeira variety. It is a carefully manufactured wine, and of uniform quality, but is often rather heavily fortified with spirit.

Port first made its appearance in this country towards the end of the seventeenth century. This famous wine is mainly produced in the north-east of Portugal, the mountainous district of the Alto Douro being the principal seat of the grape cultivation, and Oporto the chief emporium of the trade.

The grapes are gathered about the end of September. They are removed from the stalks, and pressed by treading in large stone tanks, the operation being finished with a screw-press or other similar contrivance. After two or three days' treading and pressing the must is left to ferment, then run off into vats and mixed with sufficient alcohol to prevent the acetous (or vinegary) fermentation. The alcohol is generally obtained by distilling wine of a previous vintage. When the lees have settled out from the fortified wine, the latter is again drawn off, and mixed with more alcohol. Ports are, in fact, among the most highly spirituous of the wines, the alcohol in them ranging up to about 20 per cent, corresponding to over 40° of proof spirit. During the following spring the wine is sent down to Oporto, where it is stored.

The "crust" or "bees'-wing" which deposits from ports on long keeping (bees'-wing being the last deposit of crust) is

substantially composed of cream of tartar and some of the colouring matter of the wine. Ports, whether crusted or not, may be either of "dry" flavour or "fruity" and full-bodied, the latter containing more unfermented sugar than the former. It is partly to retard or prevent the complete fermentation of the sugar that ports and wines of similar character are often so strongly fortified with alcohol. If kept long in cask port loses more or less of its colour and becomes "tawny"; it also has then less body and alcoholic strength, and becomes a light, aromatic, and yet agreeable wine. The production of the bouquet-ethers is believed to occur more rapidly in bottle than in wood, and hence it is considered desirable that port should have been bottled and thrown a crust before it is used. Within limits, the longer it has been in bottle the more it is improved in fulness and delicacy of flavour.

Large quantities of sparkling wine are produced in the **Saumur** district of France, in the department of Maine-et-Loire. The wine is made from both black and white grapes, in much the same way as already described for champagne. Saumur and Sauterne. As a rule, however, the finished product is a mixture of two successive vintages. The black grape used is known as the Breton variety, and the white as the *Pineau blanc*. Dry Royal, Cuvée Excellence, and Brut Royal are some of the best-known brands of Saumur, but brands are not well known in the Saumur trade, which is mostly in cheap wines. The chief shippers are Ackerman-Laurance, Bouvet, Amiot, de Neuville, and Durau.

The wine usually known as **Sauterne** is produced in the district south of Bordeaux—which is, in fact, the principal white wine district of France. The vintage is late, falling about the end of October, when the grapes are fully ripe. There are three qualities of must recognized: "head", "middle", and "tail"; the first and ripest yields a sweet, luscious wine (*vin de tête*) chiefly exported to Russia; the second (*vin de milieu*) is the Sauterne quality; and the third (*vin de queue*) is a dry white wine. The chief communes engaged are Sauternes, Barsac, Bommes, Fargues, Graves, and Preignac; and the finer growths are classed, like the clarets, into different "châteaux". *Château Yquem* (*Sauternes*) is a class by itself, forming the "grand first

growth" of Sauterne; it is the most prized wine of this variety. The "first growths" are:—Châteaux: Latour Blanche, Peyraguey, Vigneau, and Robant (*Bommes*); Coutet and Climens (*Barsac*); Suduirant (*Preignac*); and Bayle (*Sauternes*). "Second growths" are:—Châteaux: Myrat, Doisy, Bronstet-Nérac, Caillou, and Suan (*Barsac*); D'Arche, Filhot, and Lamothe (*Sauternes*); Malle and Romer (*Preignac*); and Peyxotto (*Bommes*).

Sherries are usually classed broadly into two or three types, Amontillado, Manzanilla, and Montilla. Amontillado is generally of deeper colour and stronger in alcohol than the Manzanilla, which is a lighter wine, of dryer character, and not, as a rule, fortified with brandy before shipment. Montilla somewhat resembles Manzanilla in character; it is a light, pale type of wine, produced in the province of Cordova. Sherry is chiefly produced in Andalusia, and its name is derived from the town of Xeres (or Jerez) de la Frontera, the chief centre of the sherry trade, and where most of the wine is made. Of **Spanish Wines** (other than sherries), we import a considerable quantity in the shape of **Red Rioja**, a wine of the claret type ("Spanish Claret"). A **White Rioja** comes also from the same place. "**Rota Tent**" is a sweet red wine used for church purposes. **Valdepeñas**, like Rioja, includes both a red and a white wine. **Tarragona** is probably the best-known Spanish wine after sherry; it is a red wine ranging from medium to rich, full body.

Of the other European wines, the chief are the **Hungarian** and **Italian**, though both **Austrian** and **Swiss** wines are also imported into this country. A large quantity of wine is produced in Hungary, 250 million gallons per annum being one estimate of the production. **Carlowitz** is probably the most important in the English trade; it is a wine of the port type, coming from the banks of the Danube. The most renowned Hungarian wine is the **Sweet Tokay** ("Essentia"), prepared from the runnings of juice of ripe grapes, obtained without pressure; but the quantity is necessarily small, and it is said that this particular variety of Tokay rarely or never appears on the market. Both red and white wines are prepared in Hungary. Good red wines of the Burgundy type are produced in Dalmatia. In Italy red ("Rosso") and white ("Bianco") still wines are the chief kinds, with a certain quantity of the sparkling varieties. **Chianti**.

Hungarian
and Italian.

Vesuvio, Sassella, Barolo, Valtelina (Rosso), and Vino del Paese (Rosso) are some of the chief red wines; Asti, Capri, Vermouth, and Vino del Paese (Bianco) are white varieties. Montferrat and Asti come from Northern Italy; Chianti, Montepulciano, and Pomino from Central Italy; while Lacryma Christi and a kind of Malvoisie are produced in the Naples district.

The Austrian "**Promontor**" and "**Red Vöslau**", and the Swiss "**Hock Clos**" need only be mentioned as wines which we import to some extent from these countries.

Of the countries outside Europe, Algeria sends us some **Algerian Claret**, and South Africa some **Red Hermitage** and **White Drakenstein** wines; but though the Cape may yet become a great wine producer, at present the chief supplies other than those previously mentioned are the **Australian** and **Californian**. A considerable amount of wine is imported into this country from Victoria, New South Wales, and South Australia. The red wines are mainly of the Burgundy character, some being ferruginous; the white are of various types, including Hock, Reisling, Tokay, Muscat, and Chablis. The chief vineyards are at Highercombe, Tintara, and Auldana. The Californian wine was originally derived from the grape known as the "**Mission**", and supposed to have been brought from Mexico by monks; but French, German, and Spanish grapes have since been introduced with more or less success. Various red and white wines approximating in some degree to those of the Old World are now produced in great quantity; those of the Claret and Burgundy types amongst the red kinds, and Chablis, Hock, and Sauterne types amongst the white varieties, being the most generally imported into this country. Other states besides California, and notably Ohio, produce wine in considerable amount.

African,
Australian,
and American.

Of the South African wines besides the Hermitage and Drakenstein already named, mention should be made of the heavier kinds, Pontac and Constantia. The Cape also produces an excellent liqueur called "**Van der Hum**".

We next come to the class of **Spirits and Liqueurs**.

Under the head of "**Alcohol**" we have already dealt with the general principles underlying the production of **spirits**. All the latter are *distilled* alcoholic liquors, thereby differing from wines and beers, both of which are fermented but not dis-

Spirits.

tilled. Spirits differ from one another chiefly in regard to flavour and the small quantities of constituents to which the various flavours are due. These small constituents are such substances as fusel-oil, certain compound ethers or "esters", essential oils, aldehydes, and small quantities of colouring and sweetening matters. Of these the most important are the ethers, for it is the ethers which confer the distinctive "bouquet" and flavour upon a spirit, and which make the difference between a crude new liquor and a soft, well-matured one. In fact the process of "aging", whether in brandy or whisky, consists essentially in the gradual formation of these ethers from the acid of the spirit and the constituents of the fusel-oil, the latter therefore diminishing in quantity and rendering the spirit milder and more mellow.

Genuine (Cognac) **brandy** is derived from the distillation of wine. From each 100 gallons of wine 10 to 15 gallons of brandy are obtained. The flavour depends upon the quality of the wine, in which small proportions of compound ethers are already formed and pass directly into the spirit, to be increased later on by the maturing process as already mentioned. The finest brandy is that produced from the white wines of the French departments of Charente and Charente Inférieure, and is known as Cognac. The Armagnac district is also a renowned brandy-producing region. The other departments chiefly concerned in the manufacture are Landes, Gers, and Lot-et-Garonne. Not much brandy is actually distilled in Cognac itself; it is mainly produced on the "brandy farms" of the surrounding neighbourhood, from which it is received as a rather strong distilled new spirit of about 20 over proof. The various quantities received are then graded and mixed, diluted to the proper strength, coloured if required with a little caramel, and filtered through paper pulp into storage vats, where it is kept until more or less matured. Inferior varieties of brandy are made from grape-skins, lees, and wine residues generally. Others are largely mixed with, or entirely made from, ordinary plain spirit obtained from grain or potatoes, coloured with caramel and flavoured with oil of cognac. Each locality furnishes a brandy of characteristic flavour, readily recognized by connoisseurs. Thus it is said that brandy made from Moselle wine has a "slaty" taste; that of St. Pierre in Vivarais has the aroma of the violet, and that of Holstein a flavour like oil of amber.

Brandy-farming.

Not much importance need be attached to the colour of brandy as a criterion of age or excellence, since any desired shade can be easily imitated. When freshly distilled, genuine brandy is colourless, but on keeping in casks it gradually becomes pale-yellow if no colouring-matter be purposely added to it. This is known as "pale" brandy. Dark or "brown" brandy owes its deeper colour to the use of burnt sugar.

Much of the brandy made in England is artificial brandy. One process is to add about half a pound of argol, some bruised French plums, and a quart of genuine cognac to 100 parts of proof spirit, distil the mixture, and then colour and flavour it with a little acetic ether, tannin, and caramel. An artificial cognac is sometimes made from palm-oil by oxidizing it and then distilling it with alcohol and sulphuric acid. Needless to say, such preparations cannot compare with genuine brandy for flavour, although for cooking purposes they are useful enough.

Genuine brandies have specific gravities ranging from about 0.929 to 0.941, and contain usually about 50 per cent of absolute alcohol, corresponding to approximately 88 per cent of proof spirit, or 12° *under* proof. The lowest strength at which it can legally be sold is 25 under proof (or 75 per cent of proof spirit).

In addition to the French product, Spanish, Italian, and Australian brandies are imported into this country to some extent. Most of them are inferior to genuine French brandy.

Gin is a spirit which differs from brandy, rum, and whisky, inasmuch as its flavouring ingredients are added directly to it, and are not products of fermentation or aging. The different recipes for flavouring in use in the trade include: juniper berries, coriander seeds, orris-root, angelica-root, fennel, calamus-root, cardamom seeds, liquorice powder, cassia buds, and grains of Paradise. These are distilled with the spirit, generally with the addition of a small quantity of salt, and sometimes with sulphuric acid, and they impart their essential oils to the spirit, giving it the characteristic gin flavour.

Gin may be either sweetened with sugar, or unsweetened. A good gin should contain at least 80 per cent of proof spirit (*i.e.* be 20 under proof); many brands are generally sold at 17 under proof (83 per cent proof spirit), others at about 22 under proof (78 per cent proof spirit). Gin must not be sold, except as "diluted

spirits", at a lower strength than 35 under proof. The sugar and flavouring-matters in good gins rarely exceed 5 or 6 per cent. **Sweetened gin** is made by mixing, with every hundred gallons of plain gin, six gallons of a "capillaire" or sugar syrup composed of equal quantities of refined sugar and water. **Plymouth Gin** is a variety which has been distilled with a little sulphuric acid. This forms a small quantity of ether, and confers on the spirit a characteristic flavour. **Geneva**, or "**Hollands**", is a kind of gin made in Holland, where a mixture of malt and rye grain is used for distilling the spirit. It is not essentially different from ordinary gin, though there are, of course, variations of flavour met with, due to the fact that several flavouring ingredients are in use. Schiedam is the chief seat of the manufacture.

The best **Rum** is produced by fermenting molasses and distilling the product in an ordinary still. Inferior qualities are obtained by **Rum.** treating in a similar way the waste cuttings and débris of the sugar-cane. Its distinctive character is due to a small quantity of an ester called "ethyl butyrate", a compound ether of alcohol and butyric acid, which, when added to ordinary plain spirits, produces a flavour scarcely distinguishable from that of genuine rum. Rum is usually a strong spirit, containing from 30 to 70 per cent of alcohol by weight. Its strength when imported into this country is generally about 20 over proof, corresponding to approximately 61 per cent of alcohol. Its specific gravity ranges from about .874 to .926, and it is always slightly acid. The legal minimum of strength at which rum can be sold is 25 under proof, unless it is sold as diluted spirits. The West Indies and British Guiana are the chief sources of rum, that called "Jamaica" being the most esteemed. "**Rum Shrub**" is rum flavoured with orange, lemon, and sugar.

Whisky is a spirit distilled either from a fermented infusion of malt only, or from malt with an admixture of other grain, such as barley, rice, and oats. In Scotland the smaller distillers, more especially, use malt only; and the spirit produced under such names as Highland, Glenlivet, Lochnagar, &c., owes its flavour partly to the peat used for drying the malt. In Ireland, with few exceptions, a mixture of malt and grain is used, and the product differs from Scotch whisky chiefly in the absence of peaty flavour. English distillers generally use

a mixture of malt and grain, the proportion of malt being smaller than is used in Ireland and Scotland. Moreover, in England it is common to use the patent or "Coffey" still, which gives a purer product than the Scotch or Irish "pot" or common stills; but the English spirit on that very account is not much used for making whisky. It is too flavourless; and is therefore largely employed for making gin, British brandy, and various liqueurs and cordials, to which the requisite flavouring essences are directly added. The pot-still spirits, when new, always contain small quantities of fusel-oil, which becomes more or less converted into fragrant and harmless esters ("compound ethers") during the process of maturing. In the course of maturation the spirit is often stored in casks which previously contained sherry, or, in Ireland, prune wine; this imparts a little colour, flavour, and sweetness to the whisky. Frequently, however, the same object is sought to be attained by blending the spirit with so-called "improvers", such as "prime wine" and "Hambro' sherry".

Attempts have been made by some analysts to lay down a standard for the amount of "extractive matter" or solid residue which whisky should contain. There is, however, no legal limit fixed. Moreover, the "extractive matter" consists mainly of sugar when at all considerable, and an excessive amount of sugar would confer on the spirit more of a cordial or liqueur character than most consumers of whisky would care for; so that the purchaser may well be left to decide for himself whether his whisky is too sweet for his taste or not.

A great deal has been said and written upon the question whether an "all malt" or a "malt and grain" whisky is the better spirit. But very little in the nature of proof has been adduced one way or the other. Most of the testimony given has been, necessarily, that of interested persons; and however desirous they may have been to speak without prejudice, it has been manifest that for the most part their conclusions have been based upon insufficient data. Up to the present time it is questionable whether there is any good evidence at all to show that an "all malt" whisky is, of necessity, either better or worse than one made from mixed malt and raw grain, assuming that both are equally well manufactured and brought to the same stage of maturity. Until stricter proof is brought forward it is

better to keep an open mind on the matter, and let the consumer choose the whisky which experience shows him will best suit both his palate and his system.

Whiskies range in specific gravity from about .915 to .920, and usually contain from 50 to 60 per cent of alcohol. Except as "diluted spirits" whisky cannot legally be sold at a strength below 25 under proof.

Apropos of **Scotch Whisky**, Sir Walter Gilbey, in "Notes on Alcohol", mentions that in August, 1655, the Town Council of Glasgow issued regulations for persons who should "brew, sell, and tap ail and acquavitæ", and in 1656 the town treasurer was indemnified for "aquavytie" sent to "ane friend". He identifies the aqua vitæ of that period with whisky (from the Irish "usquebagh", uisge-bēātha, water of life), and quotes a work published in 1651 which contained illustrations of brewing it in a pot still.

Liqueurs or **Cordials** consist essentially of rather strong spirit, flavoured with various essences, fruits, and spices, generally sweetened with sugar, and often coloured brightly with vegetable colouring-matters, such as turmeric and cochineal. The fruit essence which it is desired to use is simply mixed with the spirit and a sugar syrup; but when the fruit itself and not the essence is employed it is allowed to digest in the syrup for from one to six weeks. Injurious colours are sometimes used, such, for example, as picric acid and impure aniline dyes. Some well-known liqueurs have been found to have the following percentages of alcohol and sugar:—

		Alcohol. Per Cent.		Cane Sugar. Per Cent.		Specific Gravity.
Bénédictine (bitter)	...	44.4	.....	32.6	.....	1.071
Crème de Menthe	...	40.7	.....	27.6	.....	1.045
Anisette de Bordeaux	...	35.2	.....	34.4	.....	1.085
Curacao	...	47.3	.....	28.5	.....	1.030
Swedish Punch	...	21.6	.....	—	.....	1.103
Absinthe	...	50.0	.....	1.5 upwards	—	—

It may be mentioned that for manufacturing cordials, &c., or rectifying spirits, in this country a "compounder's" license is required, costing £10, 10s. Rectifiers and compounders are not allowed to sell less than two gallons at a time, and then only British compounded spirit and spirits of wine.

The chief **foreign liqueurs** sold in this country are Abricotina, Absinthe, Anisette, Bénédictine, Chartreuse, Crème de Menthe, Crème de Cassis, Cherry Brandy and Whisky, Curaçoa, Kümmel, Maraschino, Noyeau, Trappistine, and Vermouth. The British makes include Crème de Menthe, Cherry Brandy, Cherry Gin, Curaçoa, Ginger Brandy, Milk Punch, Crème de Noyeau, Orange Brandy and Gin, Sloe Gin, and Peppermint. **Absinthe**, the use of which in London is on the increase, contains as its distinctive ingredient a poisonous oil, viz. wormwood oil. Other flavouring oils are always present, such as aniseed, angelica, cinnamon, clove, and peppermint oils. The cordial is yellowish-green in colour, which it owes to the juice of spinach, nettles, or parsley. **Benedictine**, one of the most ancient of liqueurs, is made at a great factory at Fécamp in Normandy; its flavour suggests that angelica is one of the principal ingredients used. **Chartreuse**, formerly distilled for the Carthusian monks at La Grande Chartreuse, Grenoble, but now made near Tarragona, is said to be a product of various aromatic plants, including peppermint, angelica, balm, hyssop, nettles, nutmeg, and sugar. The mildest is white, medium yellow, and strongest green, the latter being in two qualities. **Curaçoa**, named from one of the Dutch West Indies, is largely made in Holland. The dried peel of the Curaçoa oranges is macerated with water and afterwards distilled with spirit and water; on being removed from the still it is sweetened with sugar and flavoured with Jamaica rum. **Maraschino** obtains its name from the small black marasca cherries, wild and cultivated in Dalmatia, which fruit is said to be bruised before distillation. An aroma is given by the use of leaves and kernels to a certain extent, and fine sugar is used for sweetening. **Kirschwasser** is distilled in Germany from cherries. The fruit when quite ripe is freed from stalks and then lightly pounded in a wooden vessel without breaking the stones. The stones having been removed the juice is fermented, and subsequently the kernels only of the stones are bruised and added to it prior to distillation. **Kümmel** is the great Russian liqueur, imported chiefly from Riga and also from Germany. It is said to be distilled from cumin, fennel, and caraway seeds, and derives its name from the German name of the first of these herbs. **Cherry Brandy** is made from cherry juice, brandy, and sugar. Jamaica ginger-essence and

burnt sugar are (in imitations) sometimes substituted for the brandy. **Anisette**, for which Bordeaux has a reputation, although it is also made to a considerable extent in Holland, is distilled from anise, coriander, and fennel. Aniseed cordial is not a distilled liqueur, but is made by flavouring weak spirit with the three ingredients named, coriander being perhaps the essential one, while clarified syrup of refined sugar is used for sweetening. **Clove Cordial** is made from spirit flavoured with bruised cloves and coloured with burnt sugar; and **Peppermint** is described as being usually the ordinary sweetened gin, flavoured with a mixture of refined sugar and the essential oil of peppermint. **Vermouth** (French and Italian) is an aperient stomachic liqueur made from angelica, wormwood, camomile, &c., with white wine.

Bitters may also be mentioned here. An old-fashioned recipe for brandy bitters was: Gentian root 4 ozs., orange peel 5 ozs., cassia bark 2 ozs., cardamoms 1 oz., and proof spirits one gallon, coloured with $\frac{1}{4}$ oz. of cochineal. Bitters prepared in France usually contain extracts of gentian root, bitter orange peel, and orange flowers, with a varying proportion of sugar. "Bonnekamp" is a speciality of the Netherlands, where it is popularly taken with Hollands gin. Angostura (from the former name of the Venezuelan city of Ciudad Bolivar) is a bitter liqueur made in Trinidad and elsewhere by distilling angostura bark, lemon peel, and other ingredients.

Methylated Spirit consists of spirits of wine or plain British spirits, of strength not less than 50 over proof, with which has been mixed at least one-ninth of its bulk of wood-
Methylated Spirits. naphtha. When intended for retailing, it must also contain three-eighths of 1 per cent of mineral-naphtha or petroleum oil. Being thus rendered unfit for human consumption, the alcohol used is exempted from payment of duty. To make methylated spirits a ten-guinea license is required. Methylated spirit must not be purified in any manner before use, and neither the spirit nor any derivative thereof may be used in the preparation of any article capable of being used wholly or partially as a beverage, or internally as a medicine (43 and 44 Vic., cap. 24, sec. 130). A retailer must not sell to one person more than one gallon at a time. For the sale of the spirit by retail a license is required, the duty being 10s. per annum, and the license expiring

Mr. JEREMIAH COLMAN, of Gatton Park, Surrey, was born in 1859, and educated at King's College School and Cambridge University, where he took honours in the mathematical tripos of 1882. Since 1900 he has been chairman of J. & J. Colman, Ltd., the world-famed mustard, starch, and corn-flour manufacturers, with which company has since been incorporated the well-known businesses of Keen, Robinson, & Co., Ltd., and Orlando Jones & Co., Ltd. Mr. Colman is one of His Majesty's lieutenants for the City of London, and is a justice of the peace and deputy-lieutenant for Surrey, of which county he was high-sheriff in 1893. He takes an active interest in philanthropic movements, was master of the Worshipful Company of Skinners 1899-1900, is fond of country pastimes and horticulture, and owns a celebrated flock of south-downs and herd of short-horns.

Sir JAMES LOW, D.L., J.P., was born in Kirriemuir in 1849. With the late Mr. William Lindsay he founded the well-known firm of Messrs. Lindsay & Low, Ltd., Manufacturing Confectioners and Biscuit Bakers, Dundee, and for a number of years he has been managing director and chairman of the company. Sir James was Lord Provost of Dundee from 1893 to 1896, and was knighted in 1895. He owns the beautiful Fifeshire estate of Kilmaron, and resides in the notable castle of that name.

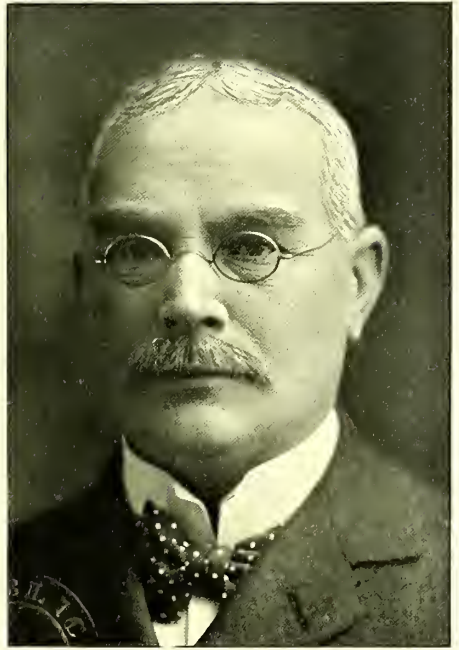
Mr. THOMAS W. M'MULLAN is a son of the late founder of the firm of Thomas M'Mullan & Co., wholesale druggists, Belfast. The business is one of the largest in Ireland. Its growth and development in its earlier days were entirely due to the ability and energy of the founder, who possessed in a remarkable degree the varied qualities essential to a successful commercial career.

Mr. HARRISON BARROW is the managing director of Barrow's Stores, Limited, Birmingham, which was founded originally in 1824 by the late Mr. John Cadbury. He is a member of the Birmingham City Council, to which he was first elected in 1898, and is president of the Birmingham & District Early Closing Association.

LEADING MEMBERS OF THE TRADE



JEREMIAH COLMAN, J.P., D.L.



SIR JAMES LOW, J.P., D.L.



THOMAS W. McMULLAN



HARRISON BARROW

on the 30th September in each year. There are certain restrictions as to quantities, registration of premises, &c.; and the local revenue officials should be consulted on these points.

The **Premises** of licensed distillers and rectifiers are subject to strict regulations by the Excise, which regulations may be perused by those concerned in the *Wine Trade Review* ^{Excise} *Whisky Guide*. With regard to **Dealers** and **Retailers** ^{Regulations.} the hand-book named gives the following as to the regulations:—

Every dealer or retailer of spirits must make entry with the Excise of every building, room, fixed cask, vessel, and utensil intended to be used for keeping spirits, distinguishing each place and thing by a separate letter or number. Every fixed cask or vessel used for holding spirits in stock must have, cut in, branded, or painted in some conspicuous part, or, if a movable cask, on both ends, the number of gallons it is capable of containing, failure to do which renders a dealer or retailer liable to a penalty of £50.

Where the strength of any spirits in the stock of a dealer or retailer cannot be tried by Sikes's hydrometer, the strength, as well as the quantity, of the spirits must be legibly painted on the containing vessel. The strength expressed in the permit which accompanied the spirits into stock may be held to be the correct strength for this purpose.

A retailer must not be concerned or interested in the business of a distiller, or of a rectifier keeping a still, carried on upon premises situate within two miles of the licensed retail premises.

A dealer or retailer must not receive or send out any British spirits of a strength exceeding that at which a distiller may send out like spirits.

An Excise officer may at any time take an account of a dealer's or retailer's stock, and any quantity of spirits he finds in excess of that shown as in stock by the stock-book is liable to be forfeited, with a fine of 20s. per gallon on such excess.

A retailer, unless also licensed as a dealer, cannot sell or send out spirits to a rectifier, dealer, or retailer, or buy or receive spirits from another retailer who is not also a licensed dealer.

Amongst other regulations we may note also:—"No spirits can be sent out by a retailer in a quantity exceeding one gallon, unless accompanied by a permit from the Excise authorities".

The **Wine Cellar** is wanting altogether from the establishments of many grocer wine-distributors, but in large businesses is, of course, properly constructed. Its floor should be concrete and ceilings and walls brick; there should be ^{The Cellar.} proper ventilation, with pure air, but no draught. This is because temperature, and evenness of temperature, require attention in the storage of fermented liquors. Heavy wines, such as ports, do best at a temperature of 58° to 60° Fahr., lighter wines at from 45° to 55°, while beers are best at a low temperature; if they have

to be kept together, say 55°. For stands and bins iron is recommended; special fittings are easily procurable from the shop-fitting firms. If saw-dust is used on the cellar floor it should not be allowed to become damp. Casks or barrels should be some few inches from the ground, and horizontal. Sound casks are very necessary for wines or spirits. Decay in the staves always taints the contents, and even woodiness impairs a fine flavour. Oak is the wood found best for casks used for long storage.

Note that rinsing spirit casks out with boiling water, or shutting up water in a cask to abstract from the wood the spirit absorbed in it, is illegal and punishable; it is the offence called "grogging". This does not interfere with the process of rinsing, but "the water must not be allowed to remain in the cask longer than the few minutes required to complete the rinsing process, during which the cask must be in the hands of the workmen or other persons engaged in emptying it".

When new casks are used they should be well washed, then half-filled with warm brine, the bung inserted, and the cask well shaken; on the brine becoming cold it is emptied out, and if the cask then has no smell it may be used. To transfer wine from one cask to another a clean syphon is used. It is necessary to avoid exposing the wine to the air; and for the same reason casks have to be kept full if possible. When a cask of wine is received it should be placed on its side in a suitable place, and a wooden faucet put in the head for drawing the wine, but this should not take place until after it has had a week or two of rest. New wine clears itself by depositing solid matters held in suspension; the deposit so formed at the bottom of the cask is called the lees. Sharp changes of temperature, say in spring and autumn, disturb the wine, and to prevent the lees mixing again with the cleared liquor **racking** is resorted to—that is, drawing off the clear wine from the lees and transferring it to a clean cask. It is well to have the racking done by someone who understands the process, although a retailer who is handy will often do it for himself with a rubber tube for a syphon! Wine that has become tart is sometimes put right by adding a little brandy; or acidity may be

Racking and Fining. neutralized by a little carbonate of magnesia. When racking fails to clear wines, and they remain for a long period without clearing themselves, filtering and **fining** become

necessary. The *American Wine Press* says the following method for **clearing red wines**, such as claret, &c., may be recommended:—“Take the whites of 5 fresh eggs for every 50 gallons of wine, beat them up into a foam. Then put this foam into a gallon of the wine to be fined, and after beating it again pour the mixture into the barrel. Then take a stick and stir the whole barrel of wine until the foam appears at the bung-hole, which should be in about ten minutes. Leave the bung off over night. The next day fill up the barrel with same kind of wine, and drive in the bung. The wine should be bright in from ten to fifteen days; if not, then fill up, and at the end of another week it should be. For **clearing white wines**, such as Riesling, Hock, Sauterne, &c., take one wine-glassful of dissolved isinglass for every 50 gallons of wine. Beat this into a foam with a gallon of the wine to be fined. Pour it back into the cask, and follow the directions above given for red wines. Usually the white wines take a little longer time to clarify than do clarets.” The *Licensed Victuallers’ Year-book* advises:—“For *sherry*, for every hogshead dissolve 1 ounce of isinglass in 1 pint of sherry by heating it over a fire gently. When cold add the white of 3 eggs, well beaten, and a dessert-spoonful of salt; whisk up well with a little of the wine, then pour into the cask, and rouse well. For *port* use the white of 8 eggs to a hogshead, well beaten into a froth, and a dessert-spoonful of salt; add a little of the wine, and rouse well after putting into the cask. Should *gin* or *whisky* become cloudy or dull, for every 100 gallons dissolve 2 ounces of roach alum in a quart of water by boiling; pour into the cask hot, and add 1 ounce of salts of tartar; stir well, and by the next day the spirit should be quite bright. A small quantity of honey or prunes will greatly improve the flavour of *rum*. When using prunes, beat well with a hammer so as to break the stones.”

In **bottling wines** (which should be done in fine and settled weather) the points to be noted are that the wine itself is bright and in proper condition, and that the bottles are perfectly clean and dry; and they should be in the cellar for at least twenty-four hours before being used, so as to be of the same temperature as the wine put into them. See that the corks are sound and new, and fit tightly. If the wine is already bottled when you receive it, examine each bottle as to the corkage and

Bottling.

see that there is no leaking, and by looking at a light through the bottle make sure that its contents are bright and clear. Put away bottled wines always on their sides, so that the cork is covered by the wine. Stored at a proper temperature, wine improves in the bottle, and it should as a rule be kept in the bottle some months at least before consumption. "When bottling port", writes Mr. J. L. K. Cockburn, "try if possible to bottle the cask in one day, as it is not wise to leave the cask on ullage, as the air affects it and frequently renders it flat. If it is desirable that the wine should become speedily matured, more space should be left between the wine and the cork than is usual, and the wine must be corked immediately after bottling. With reference to sealing, it is advisable to add some bees'-wax to your pot of melted wax, as it makes the wax harder. The neck of the bottle should be dry, otherwise the wax is liable to crumble off. Newly-bottled ports should be left standing on end for from twenty-four to thirty hours before binning away, otherwise there is a chance of them bursting; and, further, by leaving them on end you know exactly the amount you will be binning away. When corking, see that the corks are scalded with hot water, then pour the water off and rinse with cold. They should then be steeped in some of the wine you intend to bottle. Squeeze the cork through the corking-machine before corking. Always obtain the finest quality of cork procurable." The same authority says that port, when ready for bottling, should have a soft taste, and should not show a purple bead when shaken in a wine-glass; if it does it is too young for bottling, unless you wish to bottle it as a vintage wine and to retain the young quality. In bottle rich ports become dryer and dry ones richer. If vintage wine is to be kept for many years it should be bottled when three years old. Mr. Cockburn considers July, August, December, and January the best months for bottling ports.

Reference has been made to the "vintage" of wine. This, like the pedigree of a prize animal, is most carefully recorded. We need not give vintages in detail here, but they will be found in full detail, year by year for each class of wine, in such a handbook as that already mentioned as issued by the *Wine Trade Review*. The age of a wine is always a leading question with a buyer. He also wishes to learn what class it

belongs to, when it will be in condition to drink, whether it is good in colour, natural, sound, and bright. Red wines are bluish-purple when young, ruby when mature, and slightly orange when very old; and pure wine has usually a brilliant colour. The bouquet or smell is, of course, carefully noted in tasting. "If the bouquet passes away rapidly," says Mr. Cockburn, "you may be sure that the wine is wanting in body and natural spirit. If the bouquet is not clean and pleasant, a good taster will at once detect artificial blending. The presence of a grape smell denotes a wine rich in natural alcohol." Fine young port wines have a slight smell like violets.

Wine is not infrequently artificially coloured, "the same with intent to deceive". When this is suspected, it is suggested that a clean sponge should be dipped in the wine and then placed in a basin of water. Artificial colouring will at once give the water a violet-red tint, otherwise there will be little or no immediate change.

Bouquet, flavour, and the maturity of age are the important points to be attended to in **buying spirits**; the older the spirit the more wholesome. Strength also must be noted. Spirits that are bright when bottled sometimes show a sediment after being some time in the bottle. This is due to the chalk or lime in the water with which they have been reduced. The best water for reducing spirits is distilled or filtered rain-water, but this is not always obtainable. To get completely rid of the lime or chalk which causes hardness in ordinary water, and gives an appearance of turbidity to spirits, distillation is the only means to be employed. If, however, there are no facilities at hand for distilling, an almost total precipitation of the lime, &c., can be effected by prolonged boiling of the water, and allowing it to cool, when the salts settle. The water drawn off will, as a rule, be found sufficiently purified.

The **handling of wines and spirits** by the retailer is a subject on which different views are held by different parties, but the question of whether he should be simply a distributing agent, or should deal with wines and spirits in bulk and try to bottle for himself, will be decided by each off-license holder according to his special knowledge, experience, and circumstances. As it is unquestionable that by far the larger proportion of grocers

Cloudy
Spirits.

Agent or
Bottler?

engaged in the trade adopt the easier course, and draw their supplies ready bottled for sale from the large wholesale market houses who cater for this business, it will be convenient here to consider advice offered from this stand-point. An excellent article contributed to *The Grocer* in 1902 by "An Expert" contains the following:—

"First comes the agency system. This has its advantages and its disadvantages. It is certainly an easy method of buying, for everything is done for you, and you can act like an automatic machine; but you lose to all intents and purposes your individuality and liberty of action. You are usually bound down to buy your wines and spirits from the firm whose agency you may select. You are making the name and reputation of the firm you buy from, but not your own. Certainly you have a very wide and varied stock to select from, and you are selling goods probably that are already known in your district, and which, therefore, command a certain sale. On the other hand, you are to all intents and purposes in the position of a tied house. Some wholesale houses—and this is tempting to the neophyte—offer part payment of license; but whether this may be a case of robbing Peter to pay Paul is a matter that each must decide for himself.

"Then there is the course of selling under your own name and brand. On this plan, while still buying your goods already bottled, you are still free to purchase where you think you will be best served. You would under these conditions be bound to no one firm in particular; you would pay your own license, and be free to take advantage of any special opportunities the market might afford. You could also, where you have a good sale for some quality in particular, buy at first a small cask, preferably duty paid, and bottle it yourself, for you would be able to purchase it bright and in fit condition for bottling. You would then gradually obtain a knowledge of how to treat and deal with such goods, and as your trade expanded be able to buy a larger cask at a price in bond; but one should guard against being tempted to buy a parcel. One can in these days purchase a small lot on almost, if not quite, as good terms as a larger one, and you thus know better your position. There are several firms, who cater for this class of trade, who offer practically the same advan-

Own Name
and Brand.

tages as the agency system, and without any of what to some may appear its drawbacks.

“In our opinion the system most conducive to success for those entering upon the trade, or indeed for those already in it, is to make in the first instance a careful selection of seven or eight descriptions of *port* of varying style and character, so that individual tastes may be suited. Small quantities at first should only be purchased, until it is seen which is the most favoured. Some of the best-known shippers' wines can be obtained labelled with their name, which naturally assists their sale. In *sherry*—the sale of which has so greatly fallen off in recent years—so many varieties may not be necessary, still it will be quite easy to have a good selection without overstocking yourself. Next to port, *claret* is the most important wine, but here the standard of price has become so much lowered that any wine over 2s. a bottle is now rarely sold by the ordinary grocer wine merchant. The 1s. and 1s. 6d. a bottle qualities are those selling best, and we here recommend that, in claret especially, quality should not be sacrificed to profit, and that you give a good article at these figures. *German* and *sparkling wines*, except perhaps the cheap kinds, have not a large sale amongst grocers; still a small, but very small, stock of these should be held. Turning to *spirits*, which will be found the more important part of the trade, you cannot well hold too good a variety. Most of the leading brands should be stocked, and you should select a *whisky* to make a leading line of under your own name. There are, however, several brands on the market for retailing as low as 2s. 6d., which leave a good profit, and for which you can obtain plenty of free advertising matter.

“In selecting the goods great attention must of course be paid to quality and price, having regard to the class of trade catered for. In this respect the best advice we can offer is: Decide upon what profit you mean to obtain on each quality you sell, and keep to it. Do not let yourself be persuaded when you find, let us say, a Scotch whisky at 3s. a bottle having an increasing sale, into taking up some other brand for the sake of making an extra penny a bottle profit. If your customers are satisfied, and you are doing a good trade, it is surely foolish policy to risk the loss of it for a slightly higher rate of profit. That course has been the means of

many a man ruining a good business. Again, it is wise to let your customers know what you are doing. One of the chief elements of success is a tasteful window display, with price tickets to each article, so that people can see what they will have to pay. When you are unable to spare window room, two or three bills on the window denoting that wines and spirits are sold should always be to the front, and you should never allow the fact of your keeping wines and spirits to be in the background. A regular distribution of circulars is also of very considerable use. It is little use making a single issue; they should be sent out three or four times a year, and in an addressed envelope. To put price-lists of wines and spirits in your parcels, or to have them dropped into letter-boxes without any cover, is not only wasting your circulars, but your time as well, for as a rule they would in this way never reach the eye of the buyer. Several of the leading London wholesale firms supply neat and attractive lists free to their customers.

“With regard to the **window display**, note that wines should never, under any circumstances, be exposed in the windows.

The Window. They should be kept in as even a temperature as possible, and invariably lying down. If stood up for any time the corks become dry, and in the case of light wines, such as claret, hocks, &c., would soon become absolutely sour and unfit for use; sparkling wines would lose their effervescence, and get quite flat; while, indeed, all wines kept upright quickly deteriorate. Of course, where cellar room is available, that would be their proper place, and only such quantities kept in the shop as may be needful for the ready serving of customers. Unfortunately, however, grocers have not—and especially in large cities—any cellar room to spare, and in that case the wine stock has to be kept in the shop. Where this is so, they should be stored as near to the floor as possible, for if high up they are exposed to the variations of the great heat engendered by the use of gas after dark and the cold atmosphere of the day when artificial light is not required. A window display can be made with empty bottles and empty champagne cases, neatly-got-up wine dummies the firm from whom you obtain supplies would be glad to send you. Spirits, on the other hand, are not injured by standing up—in fact, they are almost better kept that way, for they neither

improve nor deteriorate in bottle, but are apt sometimes, and especially so in 'gin', to get discoloured by the action of the spirit on the cork, and which, naturally, they are more susceptible to if lying down. They can also be advantageously used for window show, and if nicely and attractively labelled make an exceedingly tasteful display. The external appearance of bottled spirits should be carefully attended to; the labels should be kept all level, so that when a row of bottles are together they should be uniform. Nothing looks so bad as to see a number of bottles together with their labels irregularly put on."

The relative merits of the agency system *versus* bottling wines and spirits for one's self were discussed by traders themselves in the correspondence column of *The Grocer*. One firm of retailers wrote that they had found bottling quite simple and easy. "We commenced by bottling wines, the cheaper kinds to show 25 per cent profit on returns, and the choicer varieties 30 per cent profit on returns; best brands of whiskies we bought already reduced ready to fill into the bottles, and cheaper kinds we reduced ourselves with filtered water to show profit of from 25 to 30 per cent on returns. The result has been highly satisfactory; not only have we doubled our profits, but we have very largely increased our sales." Another correspondent—a Scotsman—declared that there is nothing to hinder any level-headed grocer from bottling his own goods, and he instanced whisky, remarking:—

"Good whisky is the result of a blend of the produce of three or more distilleries. Each distillery has some peculiar, telling characteristic. The average age of the component parts should be not less than three to four years—the talk of ^{Handling} Whisky. twelve- or twenty-year-old whisky is usually rubbish. The prices vary from 1s. 1½*d.* for grain to 3s. 11*d.* for malts. These prices are for the stuff when new. As the clearing from bond and blending usually takes more space than the retail grocer can afford, I will pass on to an easier way, viz. to buy blended whiskies in bulk.

"Any established wholesale spirit dealer can supply a good fair blend at about 16s. per gallon duty paid. This price is above the average. Such a whisky is usually about ten points over proof. If we take a quarter cask (30 gallons) at the price I have stated, 16s. per gallon at ten over proof, to reduce this to 17.5

under proof add 10 gallons water. We have now 40 gallons, equal to—

240 bottles good value at 3 <i>s.</i> each	...	..	...	£	<i>s.</i>	<i>d.</i>
				36	0	0
Cost.				£	<i>s.</i>	<i>d.</i>
20 dozen bottles at 15 <i>d.</i> per dozen	...			1	5	0
20 „ corks at 2 <i>d.</i> „	..			0	3	4
20 „ capsules, say ... ..	..			0	3	0
20 „ labels ... ..	..			0	5	0
30 gallons whisky at 16 <i>s.</i> ... ..	..			24	0	0
				<hr/>		
					25	16 4
Profit ... ..	...	...	...	10	3	8

I have allowed nothing for labour, but the actual profit is much more than the above, for 17.5 under is much stronger than most people like it, and even at that strength, as bottles are now made smaller than usual, 250 bottles from the above quantity is nearer the mark.

“Another way is to buy blended whisky in bond. There are some of our Scottish houses doing an enormous trade amongst better-class retailers in this article. For 3*s.* 6*d.* per liquid gallon in bond a very fine blend can be bought. This blend is usually about 3.5 over proof; to this add the duty, 10*s.* 10*d.* per proof gallon, makes the cost 14*s.* 9*d.* per liquid gallon. This being weaker, will not stand so much water as my previous example. The actual figures are—30 gallons at 3.5 over will hold 8 gallons water. This gives us 38 gallons spirits at 18 under proof, equal to—

228 bottles at 3 <i>s.</i> ... ..	..	...	...	£	<i>s.</i>	<i>d.</i>
				34	4	0
Cost.				£	<i>s.</i>	<i>d.</i>
19 dozen bottles at 15 <i>d.</i> per dozen	..			1	3	9
19 „ corks at 2 <i>d.</i> „	...			0	3	2
19 „ capsules, say ... ..	...			0	3	0
19 „ labels ... ..	...			0	5	0
30 gallons whisky at 3 <i>s.</i> 6 <i>d.</i> ... ..	...			5	5	0
Duty 30 gallons at 3.5 o.p. equals 31.1						
gallons at proof at 10 <i>s.</i> 10 <i>d.</i> ... ..	...			16	16	11
(See foot-note, next page.)				<hr/>		
					23	16 10
Profit ... ..	...	...	...	10	7	2

A big proportion of whisky sold is simply new grain, costing about 1*s.* 2*d.* per proof gallon. To this add the duty, 10*s.* 10*d.*

per proof gallon, and you have an article 11 over proof (the usual strength of such spirit), costing 12s. per proof gallon, or 13s. 2½*d.* per liquid gallon at the strength stated. Reduced to 18 under by the addition of 11 gallons of water to 30 of spirit, you have a pure wholesome beverage, but much inferior to the other I have detailed."¹

On the other hand, an agent who signed himself "Satisfied" offered the following reasons for his signature:—"When I approached a certain firm with a view to taking up the agency, I met with every consideration and courtesy. A Contented Agent. They conducted the application before the magistrates for the license, sent me all the notices, &c., which had to be posted, and did all the business in connection therewith for less than half it would have otherwise cost me. I have no doubt that if one bought from private firms one could buy more cheaply, but there are many advantages in being an 'agent', especially for country grocers whose turnover, like mine, is not very large. My trade in the wine and spirit department does not exceed £200 per year. My firm pay half the cost of licences. They also send me show-cards, billheads, gummed labels, and large posters with my name and address on as their agent; also place a large show-frame outside the railway station. These advantages one would not get if he bought from 'private houses, and, taking these into consideration, I think a small trader, at any rate, is much better off by holding an agency. My firm charge on invoice 1s. per dozen for all classes of wines and spirits; this covers cost of carriage and carriage back on return empties. (I live over 200 miles from the firm.) Again, if one contemplated bottling one's own wines and spirits, there would be the cost of bottles, corks, labels, cases, &c., which would take away a large portion of the extra profit obtained. For one to take up this branch of the trade successfully I should think he would require to do a turnover of at least £1000 per annum. Another advantage I consider with a small turnover like mine is that one can get small quantities of any grade of wines and spirits. It is very necessary to keep a varied selection of prices. Perhaps one customer wants a bottle at 2s., and the next requires one at 3s. 6*d.* To stock and bottle all these grades would require a heavy stock, besides locking up a large amount of capital."

¹ With reference to the above-quoted letter, it should be noted that the duty per proof gallon is now 11s. instead of 10s. 10*d.*

9. BEER AND OTHER BEVERAGES

In dealing with "alcohol" in the previous chapter we described the production of sweet wort from grain and the principles of its fermentation into alcohol. But whereas in the **Brewing Beer and Stout.** making of spirits the fermented wort is distilled to separate the alcohol, and the residue is a waste-product, in the manufacture of beer there is no such separation, and the fermented wort itself constitutes the beer. There are, however, in this case certain other operations, such as hopping and fining, through which the wort is put; and the process of fermentation itself is carried out differently. In making spirits, the object of the distiller is to ferment as much as possible of the starchy and sugary matter of the wort into alcohol, whereas the brewer of beer desires to keep a portion of the starch and sugar unconverted in order to give "body" to the product. Hence when the wort has fermented far enough the beer is run off into settling vats, leaving the yeast behind, after which the main fermentation practically ceases.

Before being fermented the sweet wort intended for beer or porter is boiled with hops for about two hours. This serves to extract the agreeable flavour of the hops, and also to harden and precipitate some of the albuminous matters of the wort—just as the boiling of white of egg in water hardens it and throws it out of solution. The wort is strained from the hops, carefully cooled down to the proper temperature, and then "pitched" or mixed with the necessary quantity of yeast for fermentation. The temperature at which the process is carried on exercises a considerable influence upon the flavour of the beer; in the Burton breweries they try to keep the temperature between 57° and 70° F., whereas in Germany they "pitch" usually at about 42° F., and endeavour to prevent the temperature rising above 45° F. during the fermentation. The difference in flavour of the two kinds of beer is well known.

After the beer has been fermented, drawn off, and settled, it is "fined" with isinglass "finings" (isinglass dissolved in acetic acid or in sour beer), and then racked into casks. When the slow secondary fermentation has practically ceased the beer may be bottled, but if too new it is apt to burst the bottles on account of

A HOP-SAMPLING WAREHOUSE

Retailers of bottled beer and stout will find details in the text of how those beverages are made, and our illustration gives a view of part of the process. The well-known Dublin firm of Messrs. Arthur Guinness, Son, & Company, Limited, owns probably the largest porter brewery in the world. It was founded in 1759, and about 1825 began to extend its business beyond Ireland. In 1860 the brewery estate covered four acres; to-day it covers no less than forty acres. Its annual output is over one and a half million barrels, and a farm of nearly 50,000 acres would be required to grow the barley malted every year. Kentish and American hops are used in flavouring the beer. The plate shows the interior of the building in which samples of hops are drawn from bulk for comparison with the purchased samples.



A HOP-SAMPLING WAREHOUSE

(Guinness's Brewery, Dublin)

the great pressure of the gas produced by the unfinished fermentation.

There has been much discussion in and out of Parliament about "pure beer", and of what it ought and ought not to consist. The matter is much more complicated than is generally recognized by those who stipulate "malt and hops only" as the proper ingredients. To mention only two or three points out of a number, it has to be considered that the public taste nowadays is undoubtedly for the lighter kinds of beer, brewed with a proportion of sugar, rather than for the heavier "all-malt" beers; and further, since the process of brewing is, in one of its main features, the conversion of starch into sugar, and the latter into alcohol, the brewer contends that there is no logical objection to making a portion of his sugar (glucose) from other starchy material than that of malt—of course, provided the material be perfectly wholesome. Moreover, there are certain administrative difficulties in the way; it would be easy enough in some cases to ascertain whether a beer had been brewed from malt and hops only, but in others it would be difficult or impossible to be certain one way or the other.

Taking the law and practice as they now stand, one recognized authority defines beer as "a fermented saccharine infusion, to which has been added a wholesome bitter". This, it will be seen, does not stipulate for either malt or hops, much less for both. Still, legal decisions have laid it down that beer must be "the article ordinarily sold under that name", so that it must at least be substantially a malt liquor. Other bitters than hops are used, such as quassia, gentian, chiretta, wormwood, and other hop-substitutes; in fact any harmless bitter is perfectly legal. But, of course, poisonous bitters, such as picric acid, picrotoxin, or strychnine, all of which are alleged to have been used, would be condemned at once, even though the quantities employed were infinitesimal.

Legally the term "beer" includes ale, porter, stout, spruce beer, black beer, and any other description of beer, and is construed to mean any liquor made or sold as a variety of or substitute for beer, and "in which, on analysis of a sample thereof, at any time, there shall be found a greater proportion than two per cent of proof spirit" (43 & 44 Vic. c. 20; and 48 & 49

Varieties
of Beer.

Vic. c. 51). Consequently any herb beer, ginger beer, hop ale, &c., comes under the excise regulations if it contains more than two per cent of proof spirit; otherwise it does not.

“Ale” is a variable term; in some parts of the country it denotes a strong beer, in others a weak one.

“Pale Ale” should be made from the finest high-dried malt and the best hops, the bitter flavour predominating.

“Mild Ale” is a sweetish, rather strong beer.

“Table Beer” is a weak variety of beer, of low “original gravity”. It is not so much brewed now as formerly, its place having been taken by “Light Dinner Ales” of somewhat greater alcoholic strength.

“Porter”, in London, is a malt liquor of about the same strength as the lighter qualities of ale, but coloured and flavoured with roasted malt and caramel.

“Stout” is a richer kind of porter, of greater original gravity and higher alcoholic strength. Certain makes of stout have distinctive characters. Thus Bass’s is full-bodied, mellow to the palate, and rather sweetish; whilst Guinness’s has a marked but pleasant acidity. In some districts the terms “stout” and “porter” are used indifferently for the same liquid. Both porter and stout are brewed with a softer water than ale is, in order to extract more albuminous substances from the grain, and thus give more “body” to the beverage.

German Beers are fermented with a different kind of yeast to that used in this country. It is what is known as “low” yeast, from the fact that it settles down instead of rising during fermentation as do our “high” yeasts. The lager, bock, summer, or export beers are brewed from a richer wort than the winter kinds, and contain more alcohol.

Bavarian Beers are generally rather low in alcoholic strength, and are only slightly bittered. They, like the German, are fermented at a low temperature, and possess a characteristic flavour and fine aroma.

The chief constituents which make up beers, stouts, and porters are:—(1) Water, 80 to 90 per cent. (2) Alcohol, 4 to 8 per cent. (3) Malt extract, 4 to 14 per cent. (4) Bitter principles from hops and hop-substitutes. (5) Carbonic, acetic, and lactic acids. (6) Small quantities of essential oils. (7) Mineral sub-

stances, mostly present originally, dissolved in the water, and consisting chiefly of sulphate and carbonate of lime and magnesia, with more or less of common salt. (8) In stouts and porters, caramel.

Strictly, no salt should be *added* to beer; but all brewing-waters naturally contain at least a small quantity of salt, which is retained in the beer. This quantity varies; in some localities it is almost *nil*; in others it may be 30 or 40 grains per gallon, or even more, though as a rule about 10 or 15 would probably be the limit. In practice, and in order to allow for this variation, the excise authorities do not object to beer which has not more than 40-50 grains of common salt per gallon, unless there is some evidence of deliberate addition of salt beyond that natural to the water. In 1903 considerable public attention was directed to the question of **Salt and Arsenic.** arsenic in beer. Certain qualities of sulphuric acid are liable to contain arsenic, and if this impure acid is used in the manufacture of glucose, the latter is liable to be contaminated with the poison. If then the glucose be used afterwards in brewing, the arsenic may pass into the beer; and, in fact, this was the source of an epidemic of arsenic-poisoning at Manchester. But this is not the only source of arsenic. Malt is also liable to contain the poison; in this case it is derived from the fuel used in drying the malt, which may be exposed to the fumes of the kiln, and so absorb the arsenic. Official steps have been taken to prevent beer being again contaminated from these sources, and a Royal Commission made recommendations to this effect in an important report issued in the autumn of 1903. Arsenic is a substance which can be detected in the most infinitesimal quantities by those who are practised in the tests, but these tests are so delicate that they are apt to mislead those who have not had experience in the application, and this is more particularly the case when the test is to be applied to a complex substance such as beer. Accordingly the Commission investigated the most suitable method of testing beers for arsenic, and recommended that the Reinsch test should be used in preference to all others at present known, as the best and most reliable test for arsenic in beer. The mode of performing it is as follows:—

Take 200 cc. of the beer in a porcelain evaporating-dish. Raise the liquid

to the boiling-point, and then add 30 cc. of pure concentrated hydrochloric acid. Insert a piece of pure bright copper foil, about $\frac{1}{4}$ in. by $\frac{1}{2}$ in. in size, and keep the solution gently boiling for 45 minutes. If at the end of that time the copper remains bright and red, the beer is free from arsenic.

If a deposit is obtained on the copper the foil is to be washed successively with water, alcohol, and ether (care being taken that these are pure), dried at a temperature not exceeding 100° C., and subjected to slow sublimation in a thin reduction-tube of small section, and not less than 2 ins. long, the upper portion of which should be warmed before the sublimation begins. For the purpose of the sublimation a small spirit-lamp flame should be used. If any sublimate is obtained, it must be examined under a magnifying power of about 200 diameters. Any sublimate which does not show well-defined octahedral or tetrahedral crystals is not to be considered arsenical.

N.B.—It must be borne in mind that the blackening of the copper or a deposit thereon from the preliminary operation does not demonstrate the presence of arsenic in beer. Abundant blackening and deposit may be obtained from the purest beer.

The beer-retailer's cellar should if possible be bricked all round, with concrete floor, and free from draught, though cool. Beers keep best at a low temperature, but evenness in temperature is always a cellar requisite. A beer cask should be placed firmly on a stand and not drawn from until it has remained in position for at least 48 hours. The vent peg must never be left out, but may be loosened to admit air when drawing beer. It should always be tightly replaced (not hammered). Beer should be drawn in a clean, *dry* jug. For drawing it is advisable to have two casks in the cellar at the same time, so that one may be getting into condition while the other is on draught. The tap should be cleansed in hot water before insertion in a fresh cask. Bottled beer should be kept in an upright position. In **fining** beer, unless the finings are sent by the brewer, nothing but isinglass should be used. Of this mix with hard ale a sufficient quantity to form a thick jelly when it is dissolved; and use about a pint of the jelly to a barrel of beer. Note that it is an offence for a retailer or dealer to adulterate or dilute beer, or add any matter (except finings for the purpose of clarification), or to mix with good beer other beer of an inferior quality. An offence of this kind entails forfeiture of the beer and liability to a fine of £50. In regard to beer law the retailer should note also what is said in the chapter on LICENSES, and in the chapter on FOOD LAW as to the Sale of Food and Drugs Acts which now expressly apply to every article (except water) used for food or

drink by man. It is an offence for a licensed grocer to give to a friend or a customer drink to be consumed on the premises; also to obstruct an officer in his duty or attempt to bribe him.

As to **bottling ales and stout**, a retail grocer who commenced this branch of the trade "without experience and without a tutor" writes:—"I keep several men constantly bottling. When the hogsheads arrive they are placed on the scantling and a porous peg inserted, and are then left about three days, when they become bright. The liquor is then drawn off into a bottling machine. No waste of any account occurs. The machine will fill eight bottles at one time to the proper level in the neck. One man exchanges the full for the empty bottles on the machine, whilst another applies the screws, and a third stacks the bottles. When placed upright and a board placed between each layer they can be built up to any reasonable height. In a few weeks the liquor will become effervescing if kept at a temperature of about 55° to 60° F., and will keep in good condition for months. Stout can be manipulated in the same manner, except that it requires more watching, as it soon becomes ready for drinking, and should then have a quick sale, or it will become 'hard', and the customers will say it is sour. When that takes place it should be mixed off with the next bottling; it will not then be noticed.

"Respecting corks, they are out of date in this district; same as the old-fashioned reputed quarts and pints for ale and stout—the imperial pints have ousted them, and this has simplified the trade very much. The screws represent an enormous saving in corks, and as for any difference in the quality of the liquor under the protection of screws and corks, the faddists at first fancied they could detect it, but it has now completely gone, and the convenience of screws is so great that my customers will not have corks."

On this question of corks *v.* screws opinions vary, but there is no doubt the general public appreciate the convenience of the screw. A second retailer writes on this point:—

"Five years ago I bought fifty gross of bottles and the same quantity of screws, both stamped with my name on, and collected all my cork bottles and sold them. The screws without the bottles cost £18. I have also had to replace some of the india-

rubber rings, costing £2. During that time I have sold 7500 dozen imperial pints of ale. If I had used corks which cost 2s. per gross it would amount to £62. Deducting £20, the cost of screws, I have saved £42 in five years, and still have a large quantity of them to use many more times. So I say, use screws by all means." Some further remarks upon bottles will be found at the end of this chapter.

Cider is made in various English counties, of which Devonshire, Herefordshire, Kent, and Worcestershire are the chief.

A good deal is made also in Normandy, Holland, and Cider. parts of Germany, as well as in the United States.

The best apples for cider-making are special kinds, not well suited for eating, being rather tough, piquant, and astringent. In Devonshire the qualities preferred are the Foxwhelp, Royal Wilding, Skryme's Kernel, and White Normandy Beech; in Herefordshire, New, Old, Bastard, Red, and Black Foxwhelps, Dymock Red, and White Musk; in the United States, the Harrison, Red Streak, and Virginia Crab. When the fruit is gathered, it is placed in heaps until ripe and mellow. After this it is pulped in a mill, being meanwhile kept moist with water. The pulp or "pommage" is next pressed to force out the juice. In England the pressing is done immediately after the pulping; in Normandy, Germany, and the United States the pulp is first allowed to stand for a time and to partly ferment, which is said to improve the flavour. Sometimes the original press-cake (or "cheese") of apple tissues is mixed with water and again pressed, giving an inferior quality of cider. The juice or "must" is set in casks to ferment, preferably at a low temperature; when the fermentation slackens, and the liquid begins to clear, it is racked off into fresh casks, where it undergoes a secondary, slow fermentation. During the following spring it is generally bottled, although strong, good cider will keep in cask for several years. Some makers add a little fresh hops to the must, to regulate the fermentation and prevent ropiness. When the must in a bad season is not sweet enough it may be made so with invert sugar. To fine and clarify cloudy cider a little bullock's blood is sometimes added to it.

In Normandy the cider-makers, after the second fermentation, again rack off the cider, taking care not to drain it down to the

lees; but in spite of the two drawings-off the cider still occasionally contains some impurities. These can only be got off by a clarifying agent, of which the best is catechu, used in the proportion of 2 lbs. dissolved in 2 gallons of water to 352 gallons of cider. The Norman cider, used as an everyday local drink (boisson), is always put into hogsheads or casks, the manufacturers using large ones containing about 4000 gallons. A report on the subject says that the tendency to acidity may be remedied by private consumers if the cider, after fermentation, is run into old wine-casks, especially those which have contained olive-oil, Spanish wines, or Marsala; ordinary casks which have contained French red or white wines are of no value for this purpose.

The best and soundest cider should contain about 8 to 10 per cent of alcohol, with from 2 to 3 per cent of sugar. By careful management ciders very strong in spirit can be obtained, and these yield a good-class brandy on distillation. A notable constituent of cider is the acid of apples—"malic acid"—which is, in cider, what the tartaric acid of grapes is in wine. But unlike the latter acid, the malic is difficult to remove, otherwise there is no reason why a good quality of apple wine should not be made from the juice of apples which would compete seriously with that made from the juice of grapes. The tartaric acid of ordinary wine is gradually deposited as "argol" during the formation of alcohol, and also in the maturing as "crust"; but this does not happen with the malic acid of apple juice.

Dry, medium, and sweet qualities of cider are bottled in England, the Devonshire and Worcestershire products being the most prized. American cider is a regularly-imported article, chiefly the "American Sweet".

Perry is made from the juice of pears in substantially the same way as cider is obtained from that of apples. There is only a limited demand for the drink.

Non-alcoholic Beverages include several distinct classes of articles, namely, Mineral Waters, both natural and artificial; Plain Aerated Waters; Sweetened and Fancy Aerated Beverages; and Fermented Non-alcoholic Drinks. Very generally, however, some or all of these are referred to collectively as "Aerated Waters" or "Minerals".

Plain Aerated Waters are the simplest class; they are merely

water aerated by carbonic acid gas. A suitable natural water is chosen, of good quality, with low bacterial content, and as free from colour as possible. If necessary, as it generally is, the water is carefully filtered, and then charged with the carbonic acid gas under pressure. The charging or "carbonating", as it is called, is done in a tin-lined carbonating-cylinder, into which the gas is pumped at a pressure of 100 to 200 lbs. per square inch, the water and the gas being then intimately mixed by means of an agitating-apparatus working inside the cylinder. When fully charged the liquid passes out to the bottling-machines, and is forced into the bottles by the pressure of the gas contained in the cylinder. The carbonic acid used for aerated beverages is largely obtained by burning coke. The gas given off is purified and compressed into steel cylinders for the use of the "mineral"-maker. A good deal is also made by treating bicarbonate of soda or whiting with sulphuric acid; and the purified gas given off during fermentation at large distilleries and breweries is also employed in aerating the various beverages in question.

In **Mineral Waters**, the natural waters, such as Apollinaris, Carlsbad, Friedrichshall, Johannis, Oberbrunnen, Rosbach, Vichy, and so on, are either table-waters, or waters which contain relatively small quantities of various saline substances (sodium sulphate, alkaline bicarbonates, sulphuretted hydrogen, and iron salts are the chief) which have, or are reputed to have, aperient or other medicinal qualities when drunk. Some are naturally aerated, others are not. These waters are bottled at the springs; sometimes, however, with more or less of treatment in the way of aerating or other process, to which some exception has been taken as interfering with the true "natural" character of the water. Alkaline, aperient, chalybeate, ferruginous, gaseous, iodized, lithiated, and sulphurous are the principal kinds.

The manufactured mineral waters, such as soda-, potash-, and lithia-waters, should, strictly, differ from plain aerated waters by containing the appropriate alkaline bicarbonate. But a large quantity of so-called "soda-water" is sold containing no soda at all. Nevertheless, the better-class firms, at least, always add the soda. It is used in the form of sodium bicarbonate, and the proportion varies a good deal, ranging up to about 120 grains per gallon. Probably a good average soda-water will contain about

70 or 80 grains. The point to be aimed at is to have sufficient of the ingredient present to confer on the water its distinctive alkaline characters, without being enough to interfere with the ordinary digestive processes.

In making these beverages the proper quantity of bicarbonate of soda, potash, or lithia is dissolved in the water in a clean slate cistern, and the solution is then passed to the carbonating-cylinder as already described for the plain aerated waters. Here it is charged with carbonic acid, and passed on to the bottling-machine.

Sweetened and Fancy Aerated Beverages, such as Lemonade, Ginger-ale, Orangeade, and other products of similar character, are manufactured by first preparing a syrup or capillaire of best cane sugar, flavouring it with the appropriate essence—*e.g.* lemon, raspberry, pear, strawberry—and then mixing this with carbonated water. Usually the proper quantity of the flavoured syrup is put into the bottles first, and the carbonated water passed into it from the bottling-machine. The differences in the flavouring essences used, in the colouring, and in the sweetness, constitute the differences between the various articles, or between the several manufacturers' brands of the same article.

Lime-juice and **Lemon-juice**, and the so-called "cordials" prepared from these, are now very popular beverages in hot weather. Raw lime-juice is prepared by squeezing or grinding in a suitable apparatus, such as a cone mill, the ripe fruit of the lime (*Citrus limetta*), the juice being afterwards strained and filtered. The juice, mixed with sugar or syrup and water, and coloured with a little saffron, supplies the "cordial". The colour of good sound lime-juice is not red, but a very pale straw.

Under **Fermented Non-alcoholic Beverages**, Ginger-beer, Hop-ale, and similar beverages are the typical drinks included; but it may be noted that when prepared in certain ways some of them are not fermented, and others are not non-alcoholic.

Ginger-beer is manufactured by making an infusion of ginger-root, and adding to the infusion sugar and some substance such as cream of tartar, to import a slight acidity to the liquid. The latter is then fermented. The operation produces a small quantity of alcohol, and the quantity of sugar used, as well as the time of fermentation, must be so arranged that the final product shall not

contain more than 2 per cent of proof spirit. If the ginger-beer (or any other beer) contains more alcohol than this it is brought within the Excise regulations, and the seller is liable to prosecution for selling such liquor without a license. Various flavouring substances are used in addition to the ginger, and it is these which distinguish the different "makes" of ginger-beer. **Hop-ale** and similar bitter beverages are made in much the same way, substituting hops or other material for the ginger-root. Some makers, however, do not "brew" their ginger and other beers at all. The fermentation is rather troublesome, and to avoid this they simply add essence of ginger or of hops to diluted sugar-syrup, and then carbonate the mixture, just in the same way as is done with the aerated waters. But the odour and flavour of such carbonated mixtures are quite different from those of the fermented beers, and lack the peculiar ethereal characters which result from the action of yeast. For various of these "beers", such as ginger-stout, and for some having registered titles, "Extracts" are sold ready for use, and the process of brewing is simply to add a pound of the "extract" to a solution of 14 lbs. of white sugar in 20 gallons of filtered or distilled water in a cask.

As a **Recipe for Home-made Ginger-beer**, Ure's *Dictionary* recommends:—

Barbadoes ginger-root, 12 ozs.; tartaric acid, 3 ozs.; white sugar, 8 lbs.; gum-arabic, 8 ozs.; essence of lemons, 2 drachms; water, 9 gallons.

The ginger-root, bruised, is to be boiled for an hour and the liquor strained off. The tartaric acid and sugar are added to the liquor, and it is then boiled, the scum being removed. The gum-arabic, dissolved in a separate portion of water, is added, with the essence of lemon. When the whole is cooled to about 100° F., some fresh yeast is added and the beer carefully fermented, after which it is bottled for use. **Ginger-beer Powder** may contain: White sugar, 5 ozs.; tartaric acid, 1½ oz.; carbonate of soda, 1½ oz.; powdered Jamaica ginger, 2 drachms; essence of lemon, 10 drops. All the materials are carefully dried and well mixed while yet warm in a warm mortar and immediately bottled. If the acid and the carbonate of soda are kept separate these precautions are not necessary.

Hot-weather Drinks are often sold by shopkeepers, especially

on popular cycling routes or at pleasure resorts. Powders and “crystals”, in such a form as to give the retailer the least possible trouble, are always advertised in the trade papers Summer Drinks. in the season. Soda-water “fountains” and “syphons” of all sizes are also employed to meet the thirsty public’s needs. In some instances a seltzogene (costing say 14s. to £1, according to size) may be used, instead of bottled soda-water, for making real “lemon-squash”, &c. In one of these small machines (say a 5-pint) seltzer-water is made by inserting 1¼ oz. of tartaric acid and 1½ oz. of bicarbonate of soda; after filling the seltzogene it should stand for two hours before being used. A delicious summer drink is made by putting into a tumbler the juice of half a lemon and a little white sifted sugar, and filling up with seltzer-water. Or a **syrup** may be kept in a bottle ready for serving in this way as required. An old-fashioned recipe for such a syrup is:—

Two lbs. of sugar; 2 pints of water; 1 oz. of citric acid; 1 drachm essence of lemon. Boil sugar in water for sixteen minutes, and let it become cold. Powder the citric acid; mix essence of lemon with it, and then add to the syrup. Mix a bottle for use.

Lime-juice, lemon-juice, &c., are also useful with syphon, seltzogene, or aerator for this retailing business in summer drinks. We append a few ordinary recipes for **Temperance Drinks**, some of which are recommended by the Church of England Temperance Society for popular use:—

Lemonade or Orangeade (for the latter substitute oranges for lemons).—Take the juice of 4 lemons, 1½ lb. of white sugar, 2 dessert-spoonfuls of cream of tartar, and 2 gallons of boiling water. Squeeze and cut up the lemons in a large stone pan; add the sugar and cream of tartar; and, lastly, pour on boiling water. This quantity can be made for about 7d.

Lemonade.—Put 1 lb. of white sugar, 1 oz. cream of tartar, and 2 lemons cut in slices in a large jug, and pour over all 3 quarts of boiling water. A tea-spoonful of essence of lemon may be used instead of lemons. This is a very cooling drink, and costs about 2d. a quart.

Lemonade (for bottling).—Dissolve 2 lbs. of lump sugar in a quart of boiling water, and 2 ozs. of citric acid, and 2 lemons sliced (or a tea-spoonful of essence of lemon); stir together, strain, and

bottle when cold. A table-spoonful in a glass of water will make a pleasant drink. Costs about 1s. 3d. a quart, which will make five or six quarts of drink. *Note*.—One lemon is about equal 10 drops of essence of lemon, or to half a drachm of citric acid. If essence of lemon is used in place of lemon, it should be mixed in when it is lukewarm.

Lemon Squash.—Put the juice of a lemon and 1½ tea-spoonfuls of powdered sugar into a soda-water glass; add chipped ice, and fill up with soda-water, stirring well with spoon. Serve either with or without straws. Another way is to use the bottle lemon-juice instead of the fruit, adding soda-water and sugar to taste.

Lemon Tea.—Make tea in the morning, put in a stone bottle, and when cold add a few slices of lemon; no milk or sugar; 1 lb. of tea is enough for 18 gallons of water. Very refreshing in hot days, and has no pernicious results.

Lemon Barley.—Take 4 ozs. of pearl barley. Wash it well, and place it in a large jug, with four lumps of sugar and half a lemon carefully peeled. Pour a quart of boiling water into the jug, and leave it till cold. This drink will cost about the small sum of 1½d., and is very sustaining.

Stokos.—Put from 4 to 6 ozs. of fresh oatmeal, ground as fine as flour, into a pan, mix with a little cold water to the substance of cream, then add 5 or 6 ozs. of loaf-sugar and a fresh lemon cut in thin slices with the pips taken out. Add a gallon of boiling water, stir thoroughly while the water is being poured on. Drink hot, warm, or cold. The lemon may be omitted, or any other flavouring used instead. The cost is 3d. a gallon, or five gallons for 1s. Four lemons are enough for five gallons.

Cokos.—Four ozs. of fresh, fine-ground oatmeal, 4 ozs. of cocoa, into a pan, mixed with a little cold water into a thin batter; then add 6 ozs. of sugar, pour on a gallon of boiling water, stir while water is being added. It is best kept in a stone jar. Costs 4d. a gallon.

Hopkos.—Boil ½ oz. of hops and ½ oz. of ginger (bruised) in 1½ gallon of water for twenty-five minutes, add 1 lb. of best brown sugar, and boil ten minutes more, then strain and bottle, or put into a cask while hot. It will be ready for drinking when cold. It should be kept in a cool place. No yeast must be used. Dried horehound may be substituted for hops. Costs 3d. a gallon.

In the mineral-water trade not much **bottling** is now done by hand, though there are still a certain number of people who prefer hand-bottled soda. Even when ordinary corks are used, machines are mostly employed for the filling. Bottles with the internal glass-ball stopper have to be turned neck downwards in the final stage of filling, in order that the ball may be forced into the rubber collar by the pressure of the gas; this is done by a special "turn-over" or "swing" filling-machine. Syphons, too, have to be inverted for filling, the liquid being then forced in through the spout. Screw-stopper bottles are filled by a machine which screws the stopper out of the empty bottle, charges the latter with liquid, then screws down the stopper again, and passes the bottle into the workman's hand all ready for the label.

Bottling
Minerals.

For the home market mineral waters used to be packed in hampers, but cases are now almost invariably employed. The cases have a separate division for each bottle, are usually provided with tie-down lids, and are made to hold two, three, four, or more dozen bottles per case. For export the bottles are generally packed with straw in barrels.

The great development of the mineral-water trade during recent years is very largely attributable to the decreased cost of production, resulting from the use of internal stoppers and screw stoppers instead of corks (see *ante*, under "Bottled Beer"). Under the older system of bottling the cost of the corks was a very large proportion—sometimes as much as half—of the total expense of production. As it was also a very general practice to send out bottles without charging for them or insisting on a deposit, the mineral-water manufacturers found the loss of bottles a serious item. Associations have therefore been formed in most parts of the British Isles for the purpose of limiting the use of bottles to the rightful owner, and establishing clearing-houses for receiving, sorting, and distributing such stray bottles as in the ordinary course of business from time to time came into the hands of manufacturers to whom they did not belong. Bottles used for beverages are now very often stamped with the manufacturer's name, which, of course, facilitates identification. Under the Merchandise Marks Act, 1887, prosecutions are successfully instituted against one manufacturer for using

bottles bearing the name of another, on the ground that a false trade-mark or trade description has been applied to the contents. So far as the retailer is concerned, the tracing and return of bottles is often a great bugbear; but the proper plan is to charge all bottles, and refuse to supply ales, stout, or mineral waters on any other conditions. A Croydon retailer, Mr. J. M'Queen, claims to have solved the bottle-checking problem by a set of books, and his system, though necessarily a little elaborate and troublesome, seems to have given satisfactory results where tried. The set consists of five parts: 1, the general-account book; 2, the counter-slip for cash sales; 3, pocket-book for each vanman or boy; 4, cross-check slip; 5, collection-list. This numbering does not quite indicate the working of the system, since books 2 and 3 and the cross-check 4 naturally come into operation before book 1, which is, so to speak, the ledger for them. Briefly, Mr. M'Queen's plan is to keep at the counter or at the customer's door, as the case may be, a record of every bottle he parts with. This record is carefully entered up in the "general-account book", which, perhaps, might more conveniently be termed the "Bottle Ledger", it being quite distinct from the ordinary books of account for goods supplied. In this "Bottle Ledger" there are columns for bottles, flagons, syphons, minerals, and jars, a small space being ruled off for each entry, and so arranged that whenever bottles, &c., are returned they may be deducted from the record by a mere tick of the pen. The entries to customers are grouped in streets or districts, so that it is the easiest matter possible to make out a collection-list for a particular vanman when the trader wishes to get his bottles in. The "cross-check" slip affords a simple means of keeping the vanmen up to their work, and also of preventing leakage; and, finally, there are forms for collection-lists for use when required.

The **cleansing of bottles**, it is hardly necessary to say, is a matter requiring the bottler's strict care; in fact, in his business the strictest cleanliness in every respect is imperative for the sake of the general health of the community as well as his own good name. The ordinary practice is to first soak the bottles in a tank of warm water, steam being laid on to the tank in a large establishment. A report on the subject to the London County Council (1903) stated that "in no respect are there more striking differ-

ences in individual establishments than in the matter of precautions as to the bottles. In the large factories careful attention is given to the question. The preliminary cleansing is effectually carried out, and, after the final rinse with clean water, the condition of the bottle leaves little to be desired. In some instances there is a tendency to err on the side of economy in the use of fresh water and clean brushes. In many of the smaller places the water in the tanks was found to be very dirty, and was only renewed at intervals of many hours, the racks on which the bottles were placed to drain were not kept clean, the brushes were in need of being renewed, having obviously done their work, and not infrequently there was no special provision made for a final rinsing of the bottle with clean water."

It is necessary also, in the manufacture itself, when a tank or other open receptacle is used for holding water, before it is passed into the cylinder in which the gas and water are mixed, to take care that the water is not contaminated by dust or soot. Sometimes this is avoided by running the water from the main direct into the mixing cylinder.

With regard to empty bottles, the Brighton Grocers' Association some years ago passed a resolution affirming their recognition of the necessity for the absolute purity of mineral waters, pledging themselves to take every possible step to prevent empty syphons and bottles from being used as receptacles for paraffin, turpentine, &c., and agreeing that all their assistants should be cautioned to take special care of "empties" while in their charge. Of course, the same warning applies to beer bottles as well. For cleansing bottles by hand the usual process is to shake vigorously inside them water and a quantity of shot; clean sand or oyster-shell broken in small pieces are also used, or a chain at the end of a wooden plug. Sometimes the work is done by machines, brushes of steel wire being made to revolve in bottles while they are filled with water, a single machine thus cleansing hundreds of bottles an hour.

10. DRUGS, MEDICINES, &c.

Under the twenty Acts of Parliament which deal directly or indirectly with their sale, the term **Drugs** has so wide a meaning that a great number of articles sold every day by all grocers and oilmen are within its scope, so it behoves all such traders to have some notion of the regulations to which trading in drugs is subject.

To begin with, we have, (1) Drugs that are scheduled **Poisons**; these the grocer is not allowed to sell at all. (2) Drugs that are dutiable as **Patent Medicines**; these must bear stamps, and a license is required for every shop at which they are sold. (3) Drugs that are saleable without stamps or license by registered chemists, under certain conditions. (4) Drugs and articles of a similar nature that are saleable without stamps or license by grocers or anybody else. In their general effect the Medicine Stamp Duty Acts render it an offence punishable by fine for any person to utter, vend, or expose for sale; or offer or keep ready for sale, whether for foreign or home consumption; or buy or receive or keep for the purpose of selling by retail, either on his, her, or their own account, or on the account or behalf of any other person or persons—any unstamped packet, box, bottle, pot, phial, or other enclosure containing any dutiable cordials, drops, drugs, electuaries, essences, lotions, lozenges, herbs, oils, ointments, pills, plaisters, potions, powders, salves, spirits, tinctures, unguents, waters, or other preparations intended to be used or applied externally or internally as medicines or medicaments for the prevention, cure, or relief of any disorder or complaint incident to or in anywise affecting the human body. This, it will be seen, is pretty comprehensive! So comprehensive are the Acts, indeed, that but for large exemptions it would be practically impossible for an oilman or even a grocer to carry on business in the way now ordinarily pursued.

The **Sale of Poisons** is conducted under legal restrictions quite apart from the question of stamp duty, and imposes responsibilities to which it is highly necessary that a retailer should have regard. Under the Pharmacy Act, 1868, those who sell by retail or dispense poisons, or keep open shop for that purpose, must be either registered chemists and druggists

or pharmaceutical chemists, licentiates of the Society of Apothecaries, legally qualified medical practitioners, or duly qualified veterinary surgeons, who may dispense medicines for animals under their care. In the Act referred to a Schedule of Poisons is given, and the Council of the Pharmaceutical Society of Great Britain may cause other poisons to be added to this schedule, by passing a resolution declaring such articles to be poisons within the meaning of the Act and obtaining the consent of the Privy Council, whereupon after a month's advertisement in the *London Gazette*, the new poison is added to the schedule. The effect of this, of course, is to debar all retailers except those named above (registered chemists, &c.) from selling the articles declared to be poisons. Several of such additions have been made to the schedule, and at the time of writing it stands as follows for Great Britain:—

Part 1.—*Arsenic* and its preparations. *Aconite* and its preparations. *Alkaloids*: all poisonous vegetable alkaloids and their salts. *Atropine*, preparations of. *Cantharides*. *Corrosive Sublimate*. *Cyanide of Potassium* and all metallic cyanides and their preparations. *Emetic Tartar*. *Ergot of Rye* and its preparations. *Prussic Acid* and its preparations. *Savin* and its oil. *Strychnine* and its preparations. *Vermin-killers*, if preparations of poisons which are included in this Part 1.

Part 2.—*Almonds*, essential oil of (unless deprived of prussic acid). *Belladonna* and its preparations. *Cantharides*, tincture and all vesicating liquid preparations of. *Carbolic Acid*, liquid preparations of, and its homologues containing more than 3 per cent of those substances, except any preparation prepared for use as sheep-wash, or for any other purpose in connection with agriculture or horticulture, and contained in a closed vessel distinctly labelled with the word "Poisonous", the name and address of the seller, and a notice of the agricultural or horticultural purpose for which the preparation has been prepared. *Chloroform*. *Chloral Hydrate* and its preparations. *Corrosive Sublimate*, preparations of. *Morphine*, preparations of. *Nux Vomica* and its preparations. *Opium* and its preparations, and preparations of poppies. *Oxalic Acid*. *Precipitate, White* (ammoniated mercury). *Precipitate, Red* (red oxide of mercury). *Vermin-killers* containing poisons, if not under Part 1.

The schedule is divided into two "parts" because those poisons included in Part 1 are subject to more severe restrictions than those in Part 2. All the poisons, whether in Part 1 or Part 2, must be labelled with the name of the article, the word "Poison", and the seller's name and address. Those in Part 1 are not to be sold unless the purchaser is known to, or introduced by some person known to, the seller; and the latter must also enter in his "Poison-book" the date

Sale of Poisons.
by Chemists.

of sale, the purchaser's name and address, the name and quantity of the article, and the purpose for which it is wanted, attested by the purchaser's signature. For *Ireland* the Poison Schedule is somewhat different from that for Great Britain, naming in addition *Phosphorus* and all preparations containing it in a free state, *Sulphuric Ether*, and *Phenol*, commonly called carbolic acid.

Grocer readers will observe, of course, that the regulations above quoted as to the sale of poisons apply only to *registered chemists*. Grocers must not sell either poisons or preparations containing them. This prevents grocers dealing in certain so-called patent medicines which contain poison; a list of such will be found in *The Grocer Diary*, revised from year to year. Poisons may be sold **wholesale** if labelled "Poison" and with the name of the constituents, and this may be done by persons who are not qualified chemists; but the transaction must be really a wholesale one, namely, a "sale by a wholesaler, manufacturer, retailer, or other person, to a retailer".

As the Pharmacy Act forbids unqualified persons either
Drug Department. to keep open shop for the sale of poisons or to sell them retail, it follows that a fully-equipped **Drug Department** can only be run by a qualified chemist or by a company employing one as salesman. A grocer cannot carry on such a department by employing a chemist, but a company, not being a "person" can do this, and thus evade the law.

What the grocer can do, however, is to sell simple drugs which are not scheduled poisons, and also (by taking out a license) **patent medicines** which do not contain poisons. Most patent medicines that contain poisons are so labelled by the makers, but usually in such small type that the grocer is likely to overlook it. Some of the catalogues of patent medicine houses give a list of poisonous "patents".

Having ruled out those which contain poisons, we have next to inquire what drugs, medicines, and such like goods are **dutiable**
Patent Medicines. **as medicines**, and what exempt. Legislation for licensing the sale of such articles and levying duty by stamps on medicines begins with an Act of 1783; the main statute now operative is one of 1812. These Acts render liable to medicine stamp duty all medicines or medicinal preparations for the human body, used as such externally or internally, and exposed to sale

Mr. JOHN WILSON is chairman of Honeyman, Wilson, & Co., Limited, Edinburgh. He has always taken an interest in public matters. For several years he was a member of Edinburgh Town Council, and acted as treasurer of the city. In the parliament following the general election of 1885 he represented the Central Division of Edinburgh. For seventeen years he acted as a commissioner for the Harbour and Docks of Leith, was twice elected chairman of the Chamber of Commerce, and was appointed a governor of Heriot's Hospital. Mr. Wilson is a justice of the peace and deputy-lieutenant of the City of Edinburgh.

Mr. PERCY T. CHIRGWIN, of R. Chirgwin & Son, Penzance, was born in 1865, and educated at Queen's College, Taunton. He succeeded to the business in 1886, and, later, added to it the bakery and confectionery branch. Mr. Chirgwin has taken a lifelong interest in the affairs of his native town, and was for a short period a member of the Town Council. He is president of the Penzance Grocers' Association, and has for some years represented it on the General Purposes Committee of the Grocers' Federation. He is now a member of the Parliamentary Committee.

Mr. ADAM S. FINDLATER, M.A., J.P., managing director of Alexander Findlater and Co., Limited, Dublin, was born in 1855. He entered his father's warehouse in 1870 as an apprentice, and now controls the largest retail grocery and wine business in Ireland. Mr. Findlater is a man of ideas, shrewd, far-seeing and practical, and his business is conducted on thoroughly up-to-date lines. His interest in his employees is such that ambitious young men eagerly seek the firm's employment, as they know that their abilities will be promptly appraised and practically recognized. In addition to directing this large business, Mr. Findlater takes an active part in the social and political life of the city.

Mr. R. T. DUERDIN, Ainsdale, is a Lancashire man, having been born in the Rossendale Valley. During the year 1902-1903 he was president of the Federation of Grocers' Associations. In February, 1904, Mr. Duerdin was entertained at the Victoria Hotel, Southport, by some 200 members of the wholesale and retail firms in the district, and was presented with a magnificent service of plate, and an illuminated address, in recognition of his services to the Southport Grocers' Association during the three years he was president, and as an acknowledgment of the success with which he filled the office of president of the Grocers' Federation.

LEADING MEMBERS OF THE TRADE



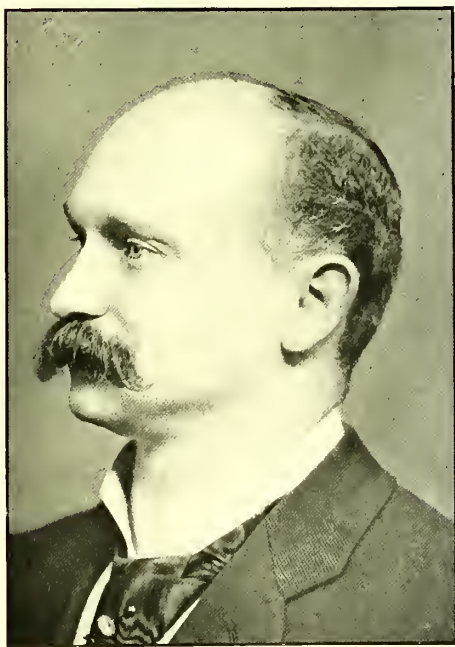
JOHN WILSON, J.P., D.L.



PERCY T. CHIRGWIN



ADAM S. FINDLATER, J.P.



R. T. DUERDIN



or sold in an enclosure. The grounds of liability are: (1) claim of occult secret or art; (2) claim of exclusive right to make; (3) a patent; (4) being held out or recommended in print or writing to the public as a preventive or remedy for a human ailment, or as a proprietary or nostrum. On the other hand, there are certain specified **exemptions**, as follows:—

1. *All drugs named or contained in the Book of Rates* subscribed with the name of Sir Harbottle Grimstone, Baronet, and mentioned and referred to by the Act of Tonnage and Poundage made in the reign of King Charles the Second, and in another Book of Rates instituted “An additional Book of Rates of goods and merchandises usually imported and not particularly rated in the Book of Rates referred to in the Act of Tonnage and Poundage made in the twelfth year of the reign of King Charles the Second, with rules, orders, and regulations signed by the Right Honourable Spencer Compton, Speaker of the Honourable House of Commons, and mentioned and referred to by an Act made in the eleventh year of the reign of His Majesty King George the First (Act of 1812)”. Drugs, &c.,
exempted
from duty.

2. *All medicinal drugs whatsoever which are uttered or vended entire without any mixture or composition with any other drug or ingredient whatsoever.* These may be sold unstamped by qualified chemists and licensed medicine vendors; and also by other persons if they are neither secret, nor proprietary, nor patented, nor have been at any time “held out or recommended to the public” by the makers, vendors, or proprietors thereof as nostrums or specifics or as beneficial to the prevention, cure, or relief of any distemper, malady, ailment, disorder, or complaint incident to or in anywise affecting the human body.

3. All mixtures, compositions, or preparations whatsoever of medicines or other ingredients, vended by *duly qualified chemists or persons licensed to sell stamped medicines*, the different denominations, properties, qualities, virtues, and efficacies of which mixtures, &c., are *known, admitted, and approved* of in the prevention, cure, or relief of any disorder, malady, ailment, or complaint incident to or in anywise affecting the human body, and which have not at any time heretofore been “held out or recommended” as above. Under this exemption, since the important judgment in *Farmer v. Glyn-Jones*, 1903, *chemists* have been enabled to sell, unstamped, large numbers of medicinal preparations the formulæ of which are referred to on the label as appearing in some well-known book of reference, such as the British Pharmacopœia.

4. *Confectionery*, under Section 54 of the Stamp Act, 1815, which says: “Nothing contained in this or any other Act shall extend or be construed to extend, to charge with any stamp-duties ginger and peppermint lozenges, or any other article of confectionery, unless the person vending the same shall sell the same as medicines or as beneficial for the prevention, cure, or relief of any distemper, malady, ailment, or disorder” incident to the human body.

5. *All artificial mineral waters*, and all waters impregnated with soda or mineral alkali or with carbonic acid gas, and all compositions in a liquid or solid state to be used for the purpose of compounding or making any of the said waters. [It is under this exemption that the effervescing Salines and Citrates may be sold as proprietaries and recommended, without being stamped; e.g. Eno’s Fruit Salt.]

Besides these specific exemptions there is the general exemption where an article does not come within the statutes, namely, where it is not a medicine for the human body; not in a packet, box, bottle, pot, phial, or other enclosure; not "used or applied externally or internally"; and not "uttered, vended, or exposed for sale". Thus, remarks the *Chemists' and Druggists' Diary*, "foods such as extract of meat, beef juice, extract of malt, and phosphated salt, uttered or vended as articles of diet and not as medicines, are not liable; nor are chest-protectors, trusses, and suspensory bandages, for although they may be used or applied externally for the prevention, cure, or relief of disorders they are not medicines. Nor do the statutes apply to articles such as asthma-powders, which are burnt and the fumes inhaled, for the reason that the article itself cannot be said to be used or applied externally or internally. As the sale of the article in an enclosure is a condition of liability, a dose of a medicine given to a customer to take at the counter is not liable to duty, however highly recommended. Dutiable medicines may be given away unstamped." Foods only come within the statutes when medicated and "held out or recommended" for ailments. Medicated soaps are not liable to duty unless directed to be applied specially in a medicinal way. If medicated wines contain so little of the medicament that they are palatable as beverages, they come under the law as to wine-license (see LICENSES), but are not taxed as medicines. Toilet preparations, such as face lotions, skin pastes, and hair washes, may be recommended for roughness of skin, chapped hands, baldness, &c., but become liable to duty if recommended for the prevention, cure, or relief of any human ailment, unless they come within the special exemption in favour of chemists and druggists. Even a perfume may become liable if recommended for the cure of an *ailment*. But the Board of Inland Revenue in its mercy does not consider the following to be *ailments*:—

Abrasions.	Freckles.	Roughness of the	Tan.
Baldness.	Husky voice.	skin.	Tender feet.
Bites of insects.	Impure breath.	Roughness of the	Tickling of the
Blemishes.	Languor.	voice.	throat.
Chafes.	Loss of appetite.	Scurf.	Want of nerve
Chapped hands.	Mental depression.	Smelling feet.	power.
Chapped lips.	Nits (but not <i>all</i>	Stings of insects.	Weakness of the
Dandruff.	parasites).	Sunburn.	stomach.

The list of drugs, &c., exempted from the statute as being named in the Book of Rates of Charles the Second's time includes the following (antique spelling as in the original):—

Exempted
Drugs, &c.

Accacia.	Benjamin of all sortes.	Ciprus nuts.	Graines of Guiny, or French Graines.
Accarus.		Citrago.	Grana pinæ.
Adyanthum album.	Bezor stone of the East India.	Civett.	Grana tinctorum.
Adyanthum nigrum.		Coculus Indiæ.	Green ginger.
Agaricus or agaric, trim'd or pared.	Bezor stone of the West India.	Coloquintida.	Guiny pepper.
Agaricus, rough or untrimbed.	Blacke Lead.	Copras, white.	Gum Amini.
Agnus Castus seeds.	Blatta Byzantiæ.	Copras, blew, of Dansk or Hun- gary.	Gum Armoniac.
Alkanet rootes.	Bolus comunis, or Ammoniacus.	Corall, white or red, in fragments for phisicall use.	Gum Caramiæ.
Alkernes Sirupe.	Bolus verus.	Corall, whole.	Gum Tragagant.
Alkernes Confectio.	Borax, in past or unrefined, com- monly called Tin- kull.	Coriander seeds.	Gum Elemni.
Aloes Sicorruna.		Cortex querci.	Gum Hederæ.
Aloes Epatica.	Borax, refined.	Cortex caperum.	Gum Lack.
Allum Kornish, or Roch.	Bunkers, or Holli- worsles or Pisto- lachia.	Cortex tamarisei.	Gum Opoponax.
Almonde, bitter.	Callamus.	Cortex winteranus.	Gum Sarcocol.
Alumen plume.	Cambogium, or Gutta Gambæ.	Coseus dulcis and amarus.	Gum Serapinum or Segapemum.
Ambergreece, black or grey.	Camphor, refined.	Cubebs.	Gum Tacchama- haecæ.
Ameas seed.	Camphor, unrefined.	Cumin seed.	Gum Arabica, or Gum Seneca.
Amomy seed.	Cancro oculus.	Cuscuta.	Gum Sandrach, or Gum Juniperi.
Anacardium.	Cantharides.	Cyclamen, or panis porcinus.	Gum Guai.
Angellica.	Cardamons.	Daucus Creticus.	Gum Caramen.
Antimomium cru- dum.	Carlina.	Deronicum.	Hermodactilus.
Antimomium pparat- um, or Stibium.	Carolina.	Diagredium, or Sca- mony.	Hornes of Hartes, or Staggs.
Argentum sublime, or limum, or Quicksilver.	Carpo balsami.	Diptamus leaves.	Hypocistus.
Aristolochia longa et rotunda.	Carrabe, or Succu- num.	Diptamus rootes.	Incense, or Oliba- num.
Arsnicke, white or yellow, or Rose- alger.	Carraway seeds.	Eleborus albus and niger.	Ireos.
Asarum rootes.	Carthamus seed.	Epithemum.	Isinglass.
Aspalathus.	Cassia fistula.	Es ustum.	Jolop.
Assafetida.	Cassia lignea.	Euphorbium.	Jujubes.
Balastium.	Castorium, or Bever- cods.	Fennell seeds.	Juniper berries.
Balsamum, arti- ficiall.	Cerussa.	Fenugrecke.	Labbadamum, or La- padomum.
Balsamum, naturall.	Cetrach.	Flory.	Lapis Calaminaris.
Barley hul'd, or French barley.	China rootes.	Folium Indiæ.	Lapis Hematidis.
Bayberries.	Christall in broken pieces for phisi- call use. {red.	Fox lungs.	Lapis Judaicus.
Bdellium.	Cicer, white and Cinabrum, or Ver- million.	Frankincense of France, or Par- rosin.	Lapis Lazuli.
Ben album or ru- brum.	Ciprus longus et ro- tundus.	Galbonum.	Lapis Tutia.
		Gallanga.	Lapis contra Yerva.
		Generall.	Leaves of Roses.
		Gentiana.	Leaves of Violets, or Flowers.
			Lentils.
			Lignum Aloes.

Lignum Asphaltum.	Olibanum, or Incense.	Radex, contra Yerva.	Spica Celtica.
Lignum Rhodium.	Opium.	Radex Peonæ.	Spicknard.
Lignum Vitæ.	Orabus.	Radex Scorcionera.	Spodium.
Lignum Nepheticum.	Oreant, or Almiet.	Radix Esule.	Spunges.
Lintiscus, or Xylobalsamum.	Origanum.	Raponticum.	Squills.
Litharge of Gold.	Oringe Flower Oyntment.	Redhead.	Squinanthum.
Litharge of Silver.	Oringe Flower Water.	Rhabarbarum, or Rubarb.	Staphisager.
Locust.	Orpiment Auripigmentum.	Rosealger.	Stecadoes.
Lupines.	Ossa de Corde Cervi.	Rosset.	Stibium.
Madder rootes, or Rubes tinctorum.	Oyle of Amber.	Sal Alkali.	Storax Calamita.
Marmalade.	Oyle of Rosemary.	Sal Armoniacum.	Storax Liquida.
Mastick, white.	Oyle de Bay.	Sal Niter.	Succus Liquoutiæ.
Mastick, red.	Oyle of Mace or Nutmegs.	Salgem.	Sulphur vivam.
Mauna.	Oyle de Beun.	Sandiver.	Talke, white.
Mechoacan.	Oyle of Spike.	Sandracha, or Gum Sandracha, or Gum Junipera.	Talke, green.
Mercury sublimate.	Oyle of Almends.	Sanguis Hirci.	Tamarindes.
Mercury præcipitat.	Oyle of Scorpions.	Sanguis draconis.	Terra Lemnia.
Mertle berries.	Panis porcinus.	Sarsafraz Wood or Roots.	Terra Sigillita.
Millium Solis.	Panther.	Sarsaperilla.	Thlasp semen.
Mirabolons, dry.	Pearle, beaten.	Saunders, white.	Torcisci de Vipera.
Mirabolons, condited.	Pellitory.	Saunders, yellow.	Treacle, common.
Mirrha.	Pepper, long.	Saunders, reade, <i>alias</i> Stocke.	Triacle of Venice.
Mithridate Venetiæ.	Perrosin.	Scamony.	Tronsals.
Mumma.	Pistachios, or Nux Pistachiæ.	Scineus marinus.	Turbith.
Muske.	Pix Burgundiæ.	Scordium.	Turbith Thapsiæ.
Musk codd's.	Polipodum.	Scorpions.	Turnericke.
Nardus Celtica, or Spica Romana.	Polium Montanum.	Sebastines.	Turpentine of Venice, Scio, or Ciprus.
Nigella.	Pomegarnet pills.	Seeds for Gardens of all sorts.	Turpentine, common.
Nitrum.	Poppy seed.	Selæ Montanus.	Umber.
Nutmegs, condited.	Precipitate.	Semen Cucumeris Cucurb Citron Melon.	Verdigreece.
Nux de Benn.	Prunellais, or Prunes of Brunolia.	Sena.	Vermillion.
Nux Cupressi.	Psyllium.	Sordonella.	Vernish.
Nux Indica.	Pyony seeds.	Spermaceti, fine.	Viscus quereinus.
Nux Vomica.	Quicksilver.	Spermaceti, coarse oyly.	Vitrolium Romanum.
Nux Pini, or Grana Pini.			White lead.
Oleum Petroleum.			Worme seeds.
Oleum Turpentine.			Xylobalsamum.
			Zedoaria.

Observe that no drugs in the above list which are scheduled poisons under the Pharmacy Act can be sold by unqualified persons.

If patent or otherwise dutiable medicines are sold a license is necessary for *every* shop. As to stamp duty, note that a packet of patent medicine which has been sold by the original vendor duly stamped may be broken open by a retail dealer and the contents sold in smaller quantities

Broken Boxes
and Entire
Drugs.

without further liability to stamp duty. Thus the Board of Inland Revenue advised in 1879 that "A duly-stamped box of pills may be broken open and the contents sold in small quantities unstamped by a licensed vendor of patent medicines, provided they are merely wrapped in a piece of paper at the time of sale, and are not delivered to the purchaser in a packet, box, or other enclosure". The effect of packing them again would be to make them into a dutiable packet. In 1903 the Board was asked:

May a trader (not a chemist) sell a pure drug labelled "headache powder" without stamping, or, say, a bottle of oil of cloves labelled "toothache tincture" without stamp?

And the reply from Somerset House was that:

The exemption from medicine stamp duty in the Act 35 Geo. III, cap. 150, in favour of "all medicinal drugs" uttered or vended entire, "without any mixture or composition with any other drug or ingredient whatsoever", applies to sales by persons holding a medicine license as well as to sales by qualified chemists and druggists.

Decisions by the courts in 1903 led to important changes in the administration of the laws applying to the sale of patent medicines. The new reading adopted by the Inland Revenue authorities affected to a large extent the business carried on both by chemists and by retailers not chemists, and in view of the enforcement of the new regulations on March 31, 1904, a general overhauling of labels became necessary. Our concern being with retailers not qualified chemists, it may be said in brief that such retailers are not allowed to sell, except as stamped medicines, drugs that are labelled with **ailment names**, such as "Cough mixture", "Indigestion pills", &c., and with **compound names**, where an adjective is used to suggest that the article sold has remedial properties. To sell unstamped these packed drugs—penny boxes of pills, or what not—the grocer must see that they are not labelled as remedies for *ailments*. The name of the organ of the body for which they are intended he is allowed to apply. He cannot sell (except under stamp) a "cough" mixture, though he can sell the same thing as a "lung" mixture. He cannot sell an "antibilious" pill, though he can sell the same thing as a "liver" pill. And

The Grocer's
Pills and
Potions.

he must not recommend his pills, or mixtures, or ointments, or drugs as good for this or that complaint. Perhaps the shortest advice we can give our readers is—Avoid Adjectives! Safety lies in calling a thing what it is—pill, mixture, or what not, but *not* by a recommendatory adjective. A leading wholesale firm published in *The Grocer* the following list of drugs and preparations which may be sold without a patent medicine license:—

Back and Kidney Pills.	Epsom Salts.	Rhubarb Pills.
Balsam of Linseed and Aniseed.	Eucalyptus Oil.	Rhubarb Powders.
Black Draught.	Family Pills.	Salts, Senna, and Sarsaparilla.
Bowel Mixture.	Fluid Magnesia.	Seidlitz Powders.
Calcined Magnesia.	Glycerine.	Seltzogene Charges.
Camomile Pills.	Health Salt.	Senna Leaves.
Camphorated Oil.	Hiera Picra Pills.	Spirits of Camphor.
Carbonate of Magnesia.	Indian Bark.	„ Nitre.
Castor Oil.	Indian Cerate.	Sticking Plaisters.
Castor Oil Pills.	Iron Pills.	Syrup of Figs.
Chappine.	Lung Balsam	„ Rhubarb.
Citrate of Magnesia.	Mustard Oil.	„ Senna.
Cod Liver Oil.	Oil of Almonds and Syrup of Violets.	„ Squills.
Cod Liver Oil and Extract of Malt.	Pennyroyal Pills.	„ Tolu.
Composition Powder.	Podophyllin Pills.	„ Violets.
„ Essence.	Quinine, Dandelion, and Sarsaparilla Pills.	Tincture of Rhubarb.
„ Balsam.	Quinine and Iron.	„ Arnica.
Compound Liquorice Pdr.	Quinine Pills.	„ Gentian.
Cooling Powders.	Quinine Powders.	„ Iron.
Effervescent Citrate.	Rose Water and Glycerine.	„ Myrrh.
		Vaseline, &c., &c.

And the Association of Wholesale Druggists and Manufacturers of Medicinal Preparations specifies the following as non-dutiable titles:—

Blood Mixture.	Kidney Plasters.	Skin Lotion.
„ Pills.	„ Tablets.	„ Ointment.
„ and Stomach Pills.	Liver Lozenges.	Stomach Mixture.
Chest Liniment.	„ Mixture.	„ Pills.
„ and Lung Lozenges.	„ Granules.	„ Powders.
Ear Drops.	„ Pearls.	„ and Liver Mixture.
Eye Lotion.	„ Pills.	„ and Liver Pills.
„ Ointment.	„ and Blood Pills.	Throat Gargle.
Female Pills.	„ and Kidney Mixture.	Throat Gargle and Mouthwash.
Gastric Tablets.	„ and Stomach Mixture.	Throat and Chest Liniment.
Head Pills.	„ and Stomach Pills.	„ Lozenges.
„ and Liver Pills.	Lung Balsam.	„ Mixture.
„ and Stomach Pills.	Nerve Mixture.	„ Pastilles.
Head, Stomach, and Liver Pills.	„ Pills.	„ Pigment.
Kidney Mixture.	„ Powders.	„ Tablet.
„ Pills.	Nipple Lotion.	Tooth Essence.
	Pectoral Lozenges.	

The grocer who stocks simple drugs will be well advised to procure them ready packed and labelled, and to secure a warranty with each consignment. When he unpacks the goods, he should place some distinctive mark upon them so that he can identify them as the particular goods for which the warranty was given. Many grocers sell drugs and articles included in the British Pharmacopœia, and when these are not of the proper nature and strength, the retailer is liable to prosecution under the Sale of Food and Drugs Acts (see FOOD LAWS). We may instance such articles as milk of sulphur, liquorice powder, camphorated oil, tincture of rhubarb, seidlitz powder, sal volatile, Gregory's powder, sweet spirits of nitre, arsenical soaps, essence of linseed, chlorodyne, syrup of hypophosphites, Parrish's food, oxalic acid, salts of lemon, cream of tartar, citrate of magnesia (must not contain lead), citric acid, tartaric acid, camphor, glycerine, isinglass, soda-water, carbonate of soda, epsom salts, calcined magnesia, chlorodyne lozenges, baking-powders (must not contain alum), paregoric, &c. It has been recommended by some grocers' associations by way of precaution that citrate of magnesia should only be sold by their members as "effervescing citrate". Note that amber-coloured bottles are useful for goods such as sweet spirit of nitre; volatile oils, olive-oil, &c., which spoil if exposed to light.

Caution to
Grocer
Retailers.

With reference to the **Sale of Disinfectants, Preservatives, Sheep Dips, &c.**, the great point on which the retailer must satisfy himself before handling them is whether or not they are Poisons. If they are, they are out of his province unless he is a registered chemist. Liquid disinfectants containing poison are sold by chemists subject to the following regulation:—

Disinfectants.

That in the dispensing and selling of poisons, all liniments, embrocations, lotions, and liquid disinfectants containing poison be sent out in bottles rendered distinguishable by touch from ordinary medicine bottles, and that there also be affixed to each such bottle (in addition to the name of the article, and to any particular instructions for its use) a label giving notice that the contents of the bottle are not to be taken internally.

This regulation does not apply to the disinfectants usually sold by grocers and oilmen, many of which are guaranteed by the manufacturers to be non-poisonous.

11. "PROPRIETARIES"

Proprietary Articles of all kinds are nowadays a feature of nearly every retailer's business. We have just been speaking of patent medicines, which are to a large extent proprietaries; but there are proprietary or packeted goods now in almost every branch—proprietary sugar, peas, bacon, suet, cheese, &c., as well as perfumes, soaps, tobaccos, cocoas, condiments, and other articles known as familiarly to the public under the name of the manufacturer as under that of the article itself. A grocer we know stocks regularly some *two thousand* proprietary articles, and new ones are constantly being added to the list!

The facility with which these packet goods are handled by the retail distributors has led to extreme price-cutting in very many of them, especially such as are so effectively advertised that the public insists on having them, so that they practically "sell themselves". But such goods, of course, displace others on which there is a better profit, so that however meritorious they may be there is a limit to the retailer's good offices in regard to them, unless they can be made to bear a reasonable "living profit".

To secure this many efforts have been made in the trade. The **Proprietary Articles Trade Association**, or "P.A.T.A." as it is commonly designated, is the most important and so far successful of such efforts. Pioneered by Mr. W. S. Glyn-Jones, a London chemist, in January, 1896, this association united manufacturers, wholesalers, and retailers in a common organization to prevent cutting by fixing minimum prices for goods and withholding the goods from cutters. Thus a man who sells one of the P.A.T.A. articles below its proper price is refused supplies of any of them.

The grocers' associations have also used their influence to induce manufacturers to fix minimum prices and compel adherence to them; and their federation has declared the principle that "where a minimum retail price is so fixed it should be one that shows a profit of not less than 15 per cent on sales to the retailer". Various manufacturers having responded to these efforts, some hundreds of "proprieties" handled by the

Fixed
Minimum
Prices.

trade are now sold at arranged prices, much to the satisfaction of all concerned.

That the law will uphold such efforts to prevent illegitimate cutting was shown in 1901 by the High Court's decision in *Elliman, Sons, & Co. v. Carrington & Sons, Limited, and Others*. The plaintiffs, manufacturers of a proprietary article, required every trade purchaser to sign an agreement not to sell below the price mentioned in the agreement, and to procure a similar agreement to be signed by sub-purchasers. Mr. Justice Kekewich granted an injunction and damages where this agreement had been broken.

The difficulty of a fixed minimum price, where the retailer has to compete with a co-operative or other society which can give a bonus or dividend operating as a further rebate on such price, has up to the present been a great bugbear. Nevertheless the P.A.T.A. principle will doubtless continue to gain in power, for the mass of the retail distributors endorse the resolution of the special trade conference held on this subject in 1902, which, after enunciating the necessity for securing to the retailers a reasonable profit, proceeded to offer this significant advice:—

That this conference recommends the members of other associations represented at the conference to refrain from exhibiting for sale unprotected and unprofitable articles, or any advertising matter connected with them, and that they should take every legitimate means of discouraging the sale of such articles.

There is, however, another class of proprietary articles which the retailer will naturally push to the utmost possible extent, namely, those he packs for himself. **Own Brand** goods, “ Own Brand ”
Goods. bearing the grocer's own name only, and perhaps a fancy title invented by him, are now very largely sold. It is not indispensable, of course, that they should be manufactured or even packed by the grocer whose name they bear. He can readily get them made and packed for him by firms which lay themselves out for this business; and it is a fact that one of the largest proprietary businesses in the world commenced in this very fashion. As “specialties worth manufacturing and pushing in the grocery trade”, and rather out of the common, Mr. Brownen, F.C.S., of Bournemouth, has suggested the utilization of malt after use by brewers, locust-beans, watercress, couch-grass, dandelion (to replace chicory), celery salt, cayenne salt, essence of tea, and so on. But

these are hints rather for the manufacturing food chemist than for the retail grocer. Fruit syrups, ginger-wine essence, and so on, may be equally beyond him. But many other goods will occur to the trader who turns his thoughts in this direction. He may at least pack his own tea and coffee, and he may without difficulty go on to peas, corn-flour, rolled oats, and so on. One retailer we heard of did very well by dyeing eggs, placing them in a fancy basket the week before Easter, and selling Easter-egg dyes to enable his customers to dye eggs for themselves.

In an address to grocers on this topic, Sir Wm. Pink, sometime Mayor of Portsmouth, remarked that: "The trader could under-
Attractive Packages. take the packing himself of best quality goods, and by judicious sampling prove to customers how much to their advantage it was to get full weight, and save excessive cost of advertising. Care should be taken to have all packages very attractive, and the grocer should never permit second-rate wholesale firms to pack goods with the retailer's name on the package. The retailer ought to have nothing packed under his name unless he was absolutely sure that the quality of the articles was the very best, and he could only get that assurance by dealing with the very best firms. Every grocer had spare time at the beginning of the week, and he advocated the utilization of this time in packing goods with attractive labels. Wherever possible, paper bags should be used in preference to cardboard boxes, the former being cheaper, and the grocer should regulate his packing by his sales. He advocated the use of gummed labels instead of string. Customers could get the ordinary advertised goods anywhere, but if a grocer put up a thoroughly good article under his own name the customer could only get it at the retailer's own shops. From his own experience he was able to say that people came from all parts to get the things which were sent out under his own label, and certain proprietary articles were in consequence selling less freely. But on no account should the big proprietary articles be pushed into the background." With regard to the packages, it may be added that cardboard boxes or "cartons", in fact boxes, cans, and bottles of every kind, are now obtainable very cheaply, whilst machines for packing, weighing and packing, &c., are supplied by grocers' engineers. A hint for rendering a paper package air-tight is to immerse it for a moment in a bath of resin just warm enough to be

liquid. Then put on another outside covering of paper. Deliquescent salts and other perishable commodities now supplied in bottles may be thus put up, a trade paper suggests.

If it be desired to register a label or trade-mark for packeted proprietary goods, this can be done without much trouble or expense. At most post-offices one can obtain application forms, which explain what is necessary. For trade-mark purposes goods are arranged in classes; thus, class 42 is the class for "substances used as food or as ingredients in food"; class 43 is fermented liquors and spirits, and class 45 tobacco, manufactured or unmanufactured. It is not permissible to copy an established design or name or use a colourable imitation (calculated to deceive a purchaser) of an existing label; and, of course, if a word has been previously registered for application to an article the Comptroller will not again accept it for registration.

12. TOBACCO AND OTHER SIDE-LINES

Besides the various "side-lines" with which we have already dealt, grocers sometimes run in connection with their business such departments as those of Tobacco, Fancy Goods, Seeds and Fertilizers, Hardware, China and Glass, &c.

To **trade as a Tobacconist**—in a small way—very little of either capital or skill is required, not much being needed in the way of fixtures, and the licence being very inexpensive (see LICENCES), whilst for those who want as little trouble as possible goods are supplied which simply need handing over the counter. There are some so-called "tobacconists" who do little more than does the penny-in-the-slot machine which dispenses cigarettes at railway-stations and elsewhere. The automaton retailer, however, is not of the kind to be emulated. Though our reader will probably deem it wise to commence with quite a small stock, it need not be composed solely of packet goods; he will not be long before he tries to hit the taste of the local smoking community with a mixture of his own sold loose, and in this and other ways he will find it possible to make a better profit than can be obtained from the proprietary goods. At the same time it should not be overlooked that as the minimum

prices of many of these are now “protected”, the conditions of trade in them are now better than when unrestricted “cutting” prevailed. To begin with, the intending tobacconist will naturally try to form an estimate of the kind of goods he is most likely to sell in the neighbourhood, and then will arrange his shop or department accordingly. Tobacco, cigars, cigarettes, snuffs, pipes—cherry or briars of various shapes and sizes, and perhaps a meerschaum or two; also walking-sticks, stick-ferrules, cigarette-boxes, matches and match-boxes, and so on, will doubtless be the stock selected. Note, therefore, that the sale of plate—that is, of any silver article weighing more than 5 dwts., such as solid silver match-boxes or cigarette-cases—necessitates a **Plate Licence**. At the same time, the plate and fancy-goods side of a tobacconist’s business is often its most remunerative side, so that this may well receive early attention.

Having formed roughly some notion of what kind of business he is going to do, the trader will endeavour to arrange his shop accordingly. The dealer in tobacco is very apt to suffer loss from evaporation, and his pipes and fancy goods also are liable to deteriorate; it is necessary, therefore, to make the best arrangements possible for storage, and the construction of the window, the shop-fittings, and the stock-room, or substitute for it, must receive careful attention. When the business is to be of any considerable size, or a department in a large store, an experienced shop-fitter should be engaged. For those who have to cut their coat according to their cloth, a few simple hints may be useful. If **the window** is not facing the north side of the street, sun-blinds will be necessary to protect the goods, and also the fancy plush, &c., which it is well to use for display, for great attention is paid to bright window-dressing in the tobacco trade. The window itself should be of plate-glass, and kept well polished. The shelves should be such as will enable a good display of fancy goods and pipes to be made; and if loose tobaccos can be shown, so much the better. Some of the smartest windows are so arranged that the whole show can be drawn back or turned round, so that dressing is facilitated. Moreover, window goods require dusting with a feather brush every morning, though it is assumed, as a matter of course, that every care will be taken to make the window dust-proof. To prevent steaming in window a tin pipe

about half an inch in diameter is frequently placed along the base of the window inside. This pipe is perforated with tiny holes. At one end is a funnel turned downwards. Beneath the funnel a small lamp or gas-jet is kept burning when required, causing a column of hot air to pass along the tube, and this hot air, rising through the holes in the pipe, keeps the surface of the window dry. It is doubtful, however, whether gassy air introduced into the window is an unmixed benefit. For illumination, ordinary gas-burners should not be used. If the window is practically a glass case (with mirrors at back and sides usually) incandescent lights over the case may be used, but outside lamps are better in most cases. Electric lights tastefully distributed are very effective, but also expensive. Inside the shop, shelves 9 inches or so from back to front are useful for “dummies” and also for goods; and a counter-case for best fancy articles, with drawers for loose tobaccos, may be put in. Scales, a balance to check weights of goods received, a cigar-cutter and a cigar-lighter to stand on the counter, may be mentioned. Sticks will usually be shown in racks just inside the shop. As a stock-room for conditioning cigars, &c., a room at the back of the shop is often employed, a small stove being used to keep the temperature at between 60° and 80°, as well as to dry the air—a necessity when the shop is at the sea-side. When a cellar is used for stock tobacco it should be neither dark nor damp, but cool, light, and fairly ventilated. It is important to have shop, stock-room, and cellar properly ventilated on modern principles, or good stock-keeping need not be hoped for. For this reason the incandescent lights are preferable where gas is used, as they contaminate the air less than the ordinary burners. In the cellar, stone jars, sometimes with tin and sometimes with cork covers, are better than wooden tubs for keeping the tobacco in.

On receiving consignments of tobacco (which should be often, as the smaller and fresher your stock the better), weigh and see that it is in proper saleable condition, and then turn it out of the bags into your stone jars. Turn the tobacco over in these jars every morning with the hands, and every night empty into them the tobacco from the shop, shaking up gently with the rest the “smalls”, unless these bits are at all mouldy, in which case they would inevitably spoil the rest. Cleanli-

Shop
Arrangement.

Handling
Tobacco.

ness is highly necessary if mildew is to be prevented; the jars should frequently be cleaned out and wiped round with a coarse dry cloth. The stock of packet tobaccos and cigarettes should be placed where they are least likely to suffer from evaporation, and as they cannot be interfered with, no matter what their condition, the less of them stocked the better. Gold-flakes, shags, roll, cake, &c., should be exposed as little as possible to the air, and removed nightly to the cellar. With regard to all tobacco, observe that the legal limit for moisture is 30 per cent. Retailers sometimes try to retain the moisture (for its evaporation means loss of weight, of course) by covering the jars with a flannel slightly damped on the upper side, and when the tobacco is actually dry it is sometimes steamed in a vessel such as a potato-steamer. In America and hot countries generally, a steaming apparatus is frequently employed as a regular fixture. But any artificial addition to the moisture in this country is not to be recommended—for one reason it is dangerous, as such addition is very apt to raise the percentage of moisture above the legal limit, and a legal penalty would be the sequel. The Excise officers have the right to enter and inspect the contents of any place licensed for the sale of tobacco at any time between 6 a.m. and 10 p.m., and if any tobacco or snuff on the premises is wilfully concealed the forfeiture of the article and a fine of £200 are incurred. A similar penalty is also risked if adulterated tobacco is kept on the premises. “Cavendish” and “Negrohead” are the official names for a class of sweetened tobacco which may be either imported or manufactured in bond; in either case it reaches the retailer packeted in Government wrappers and bearing the Government stamp. It is the retailer’s duty to obliterate the stamp before he delivers such tobacco to a purchaser, but he must not tear the wrapper or open the packet even to show the contents (except just a corner) until he sells it. Consequently, to avoid penalty, if a wrapper gets accidentally torn, the retailer must use up the contents himself in some way—probably he will do so by putting the tobacco into a mixture.

With regard to **mixtures**, try a little of the Cavendish we have mentioned with shredded plug, honey-dew, and ordinary Virginia. A good gold-leaf Virginia is usually an important item in a retailer’s regular stock of loose tobacco; it should be bright and coloury, free from eyes and bits of stalk,

and should be, as its name suggests, proper American tobacco. The working-man's tobacco is commonly plug, cut cake, Irish roll, &c. For a cheap mixture, Kentucky or other American leaf is sometimes eked out with cheap Java or Japan. For a high-class mixture, Hand-cut Virginia may be supplemented by a little Perique for medium-flavour, or by a little fine Turkey for mild, a pinch of Latakia being added for the sake of the aroma, which many smokers find agreeable. Cheap mixtures are often most economical as supplied ready for use by manufacturers. The following are recipes rising in price from cheapest upwards:—

Honey-dew (No. 2 quality), 25 per cent; cut cake, shredded, 50; light fine or Cuba, 25.

Honey-dew (No. 2), 25; cut cake, 50; Latakia, 25.

Arriba, 20; hand-cut Virginia (best), 20; No. 2 flake, 40; Latakia, 10; best cut cake, 10.

Hand-cut Virginia, 30; Tontine flake, 50; cut cake (best), 20.

Flake Virginia honey-dew, 40; Perique, 15; No. 1 flake, 10; dark Virginia, 25; light shag, 10.

Many varieties of tobacco are now grown, so that the blender need never be at a loss for either leaf or flavour. One of the newest introductions is South African, although Cape (Cango) and Transvaal Boer tobacco from the Magaliesberg have long been known in these countries themselves, and their distinctive flavour is appreciated. Although a good deal is heard of "Egyptian", it was a fact, until very recently, that all the Egyptian tobacco was Turkish. In Turkey the Cavalla district is one of the most famed. Greek, Macedonian, and Bulgarian leaf is used a good deal for blending with Turkish for cigarette purposes. With regard to mixtures made by the tobacconist himself, experiment is recommended, and when once the suitable formula has been found, take care, by weighing the quantities and using judgment, to keep the mixture uniform. For judging his tobacco the retailer should try to keep a good palate by being very moderate in his own smoking, and he will usually find his perception keenest in the morning.

Mixed **parcels** of tobaccos, cigarettes, cigars, pipes, &c., are obtainable from various houses in the trade, and will be found convenient for a novice or small buyer. We have not the space here to deal fully with pipes, snuff, fancy goods, or cigarettes.

These latter are now so commonly sold ready-made that detailed description is hardly required. They are chiefly made, of course, by steam-driven machinery, which fills the endless paper tubes and cuts them into cigarette-lengths at an astonishing rate per minute.

Cigars nowadays vary in price and quality to a bewildering extent, so that the beginner in the trade can hardly do better than About Cigars. buy for the price suited to his trade from some responsible and respectable house. As he gains in experience and ability to distinguish he will find ample scope for expert judgment in choosing brands. Quite recently the British-made cigar has been immensely improved; while the mould-made and machine-made article have made progress, and have had great effects in reducing prices. Besides the Continental cigars, cheap cigars are imported from India—sometimes too strong and oily but not lacking in flavour; whilst really excellent cigars are made of the leaf from Mexico, Manila, North Borneo, and elsewhere. But, as every smoker knows, the cigar *par excellence* is the product of Cuba, where the climate, soil, seed-plants, and hereditary skill of the growers of leaf in the famed Vuelta Abajo and other districts, and the unrivalled experience and skill of the manufacturers and their employees in Havana, produce cigars that hitherto have proved quite unapproachable in quality by the product of any other part of the world. The tobacco-raising districts of Cuba are usually classified in this order: (1) Vuelta Abajo, (2), Semi-Vuelta, (3) Partidos, (4) Vuelta Arriba, (5) Santiago de Cuba. The finest tobacco in the world is the Vuelta Abajo, grown in the province of Pinar del Rio, at the west end of Cuba; the normal production being about 200,000 bales a year. There are sub-districts famous for their particular growths, such as San Juan y Martinez, San Luis, Guane, Consolacion del Sur, and so on. Partidos leaf is much lighter than Vuelta Abajo. In the Vuelta Arriba, Remedios and Santa Clara are perhaps the best-known districts; a good deal of so-called Remedios also comes from the Puerto Principe province. The brand is of great importance in cigars; and the Merchandise Marks Act is now a reasonable security that if a box bears the word “Habana” it is of Cuban origin (note that in Spanish the letter “b” is pronounced as we pronounce “v”, so that “Habana” in Spanish becomes “Havana”—but not “Havan-

nah"—in English). The Union of Cigar Manufacturers of Havana has its own labels dated March 27, 1889—the date when the label was agreed upon. The manufacturers and brands of Havana cigars are numbered by the score. Other marks and words regarding which the retailer may be curious are those denoting *size* and *shape*, such as "Imperiales", "Regalias", "Bouquets", &c.; *quality*, such as "Superior", "Flor", and "Flor Fina" (finest flower); and *colour*, namely, "Claro", very light and very mild; "Colorado claro", light mild; "Colorado", brown medium; "Colorado madura", dark-brown full-flavoured; and "Maduro", dark, very full-flavoured.

Cigar
Marks.

In choosing ordinary as apart from high-class branded cigars attention should be given to the outer wrapper, although, as the inside "filler" is always of a cheaper and different kind of tobacco leaf, whilst there is a third leaf perhaps in the "bunch" or under-wrapper, the outer wrapper obviously cannot be a sufficient test. All that can be said is that a good wrapper is not likely to be wasted on a bad filler, or a bad filler used to spoil a good wrapper! The wrapper should be smooth, free from thick veins, light to medium brown, and, above all, be of good burning quality—that is to say, the lip of the cigar, as it is called, should burn white, and be indistinguishable from the rest of the cigar. When the outside wrapper burns black, and is not perfectly consumed, the cigar should be condemned. The vein running along the wrapper should be very fine; if coarse with a knife-like edge it is probably not even Borneo or Sumatra leaf, such as used for medium-price goods, but some "substitute". (In the trade, leaf from Germany, Holland, China, Japan, Java, &c., is known as "substitute"). The "filler" and "bunch" may be exposed by slitting the cigar with a pen-knife. The filler of even a fairly cheap cigar should be "long filler", that is, composed of picked leaves of some length, not mere scraps and odds and ends of wrapper cuttings, such as are sometimes used for the purpose; and the "bunch" or inner wrapper should be judged by the grain of the leaf composing it—fine or coarse. The inner leaf of a good cigar should not go out immediately the match is withdrawn after lighting it when freed of the wrapper. The smell of the filler also tells tales to an expert. A retailer should occasionally test his stock through all its grades. Cheap cigars in proper condition

Judging
Cigars.

should burn level all round with a white ash; while the better class goods (which will probably give a crisp crackle when rolled gently in the palm of the hand) when smoked should have a whitish or dull slate-coloured ash, which should stand well. The **condition**, of course, has much to do with the smoking value of a cigar. Bad conditioning will spoil the best of cigars. The poorer the tobacco the more drying and maturing it requires. A moderately **Conditioning.** high temperature in summer and winter alike is needed for conditioning, and may be obtained by a steam-heating apparatus or a suitable kind of stove. A "maximum thermometer", which records automatically the highest temperature reached, costs little, and is useful in a stock-room to ascertain the degree reached when artificial heat is used all night. But note that the expensive Havana cigars need neither high temperature nor long drying, and may easily lose their delicate fragrance through injudicious drying or storing. This, too, applies to British-made cigars of best quality made from Havana leaf. The main requisites in storing these are a proper degree of ventilation and an even temperature. With all cigars, be careful not to "bake" them. Slow conditioning is best; if wanted quickly, put the boxes (leaving space for air) on the upper shelves of your shop or room where the air is always hottest; and for hurrying the process ease the lids a little. Note that if cigars are left in the window through a cold night the condensed moisture soon causes them to deteriorate.

Tobacco which has "gone off" should be returned to the manufacturer, who will usually allow a price for it. Shop-soiled or unsaleable goods may be got rid of by clearance sales. Some soiled stock may be renovated. Thus a little rouge and water and a bit of silk will polish up a tarnished silver band. *Real* leather cases, pouches, &c., may be treated with white of egg, and when quite dry rubbed up with a fine cloth. Meerschaums should be dusted carefully with a silk handkerchief or soft brush; if scratched they may be rewaxed without great difficulty. With regard **Pipes.** to **briar pipes** that have become shop-soiled, a practical writer in the *Tobacco Trade Review* recommends as follows:—

"Take half a pound of arnica chips and a pint of boiled linseed oil. Place these in a saucepan, and heat them for two or three hours over a gas-stove at boiling temperature. After being allowed to cool, add a quarter of a pint of turpentine, and then strain off into a bottle for use. After removing all dust and dirt from the pipe,

it should be carefully smeared over with the stain, and when perfectly dry polish with a fine cloth. Vulcanite pipe-stems which have become discoloured, or give off an unpleasant odour, should be washed first with "Monkey" soap, rubbed with a little Paris whiting and oil, and finally polished up with chamois leather. This method is far preferable to that of painting the stems with so-called "revivers", which shortly after application can be scraped off with a knife."

Walking-Sticks, which are so commonly stocked in a tobacconist's department, depreciate in value by losing their brightness and polish, but these may be easily restored. The stick, say Sticks. a Malacca cane, should be first of all well cleaned, and then revarnished with a little white hard spirit varnish, applied in the usual way. This can easily be procured from any oil and paint warehouse at a cost of 1s. 3d. per pint, or the tobacconist can easily make his own varnish with white shellac dissolved in methylated spirits. Amongst sticks suitable for such a trade the most popular, perhaps, are the whangee, cherry, Congo, ash, English furze, and rattan cane. Olive, ebony, hazel, partridge cane, bamboo, oak, acacia, cinnamon, &c., are others. The *Whangee* grows underground in China and Japan, being the surface root of the bamboo cane; it should taper slightly from handle to ferrule, with knots at close regular intervals, and the bark hard, smooth, and crackless. Bending a whangee double injures the cane. Its natural colour is primrose yellow, but it is stained red, green, bronze, and brown. The "*Congo*" is the trade name for a species of chestnut from Northern Europe. The *Cherry* should be free from blemishes and abrasions in the bark, which reduce the value; occasional application of a lightly-oiled rag keeps the bark from peeling and the stick fresh. The *Ash* should have a good rustic handle, sound, even, clean bark, good colour and size. The *Rattan* from Singapore sells best with an attractive nose-cap or other mounting. The *Olive* stick comes chiefly from Algeria. *Cinnamon* is a trade name for the olive with the top bark removed. The *Pepper* stick is also an olive in reality. *Acacia* is a trade name for dogwood. In *Ebony* choose heavy wood with close grain. The *Malacca*, which comes not from the Straits so-named but from Siak, Sumatra, is the cane aristocrat, useful to stock as a presentation stick; size and bark decide its value, the best being those which, while thin, have the bark complete and clean, instead of showing a ridge where the bark ends. Expensive sticks such as

these should be kept in a dust-proof show-case inside the shop. Note that the high polish of mounts is very easily damaged. The use of a harsh polishing agent may ruin the appearance; unless mounts are very much tarnished a chamois leather is all that is wanted to keep them right.

A **China, Glass, and Earthenware Department** is carried on with success by many a grocer and many an oilman who entered upon the business as a novice, and simply to keep pace with some competitor such as the Stores, or to meet an ascertained need in his particular neighbourhood. These goods as a rule show a profit which a grocer deems reasonable (for grocers have not extravagant notions about profit in these days), and they have also the great advantage of not deteriorating in value, whilst they are cleanly to handle. At the same time, one must bear in mind in choosing stock that there is saleable and unsaleable, and that if one's working capital is locked up in stock that does not move, the interest vanishes even if the stock itself keeps its value. For storage use a part of the warehouse or cellar into which crates can be conveyed without breakage of the contents; and in the shop a few shallow bins and shelves which can be put up inexpensively. At starting it will probably be found well to try one of the mixed parcels of china and earthenware which are quoted at various prices in the catalogues of firms in London, Birmingham, and the Potteries. Thus one can obtain an assortment suited to the needs of one's likely customers without expending too much capital in any particular sort. Crates of articles of various kinds, but all at one price—such as sixpenny-halfpenny china goods and penny glass—can also be obtained. The great potteries of Staffordshire, in the group of towns including Longton, Hanley, &c., which are known as “the Potteries”, have most of them London houses where goods can be inspected by traders on that side the country; or samples can be obtained direct from the works. “Wedgwood”, “Minton”, “Worcester”, or “Sèvres” ware is for handling by traders who have gained experience, though it might be well to try to pick up some little knowledge of the characteristics of these, the artistic varieties of china and porcelain, in which some of the most beautiful examples of high art have been produced.

In **buying Earthenware** note that the term “dozen” is merely an expression which technically means any number of articles, say

from eighteen to forty-two, rising by sixes. In the Pottery trade dozens run 6, 9, 12, 18, 24, 30, 36, 42, according to **Buying and Custom.** size, the smaller the size the larger the number. On the other hand **China** and **Fancy** cups and saucers are quoted twelve of each to the dozen. Makers of earthenware use numbers to denote the different sizes of goods, but in this practice there is no standard to secure uniformity, so that the sizes denoted by the same figure in Staffordshire or in Scotland may be quite different. The three principal varieties of earthenware are "CC", or practically white; "Printed", or goods decorated with a pattern in one colour; and "Enamelled", or ware decorated in various colours. In the first are such goods as toilet-ware, dinner-ware, jugs, pudding-basins, pie-dishes, jam-pots; in the others most of the dinner-services, tea-services, toilet-services, and decorated ware generally. Dinner-ware is usually quoted at a rate of so much per dozen of 8-inch plates (measured from inside to outside); a standard scale being applied by which the other articles in the set are priced in proportion. Sometimes "seconds" or faulty goods can be obtained from the potters at cheap rates per crate or set.

In **Glass** many kinds of dishes, bowls, salt-cellars, and similar articles are produced cheaply by being "pressed" or "moulded", whilst bottles, decanters, and so on are "blown". A great **Glass.** deal of cheap glass comes from Belgium and Germany, but the English glass, such as is made in the neighbourhood of Stourbridge and Birmingham, is as a rule of far better quality, and being more carefully annealed, is not so likely to "fly" under heat. Glass is "cut" by wheels, against which the article is held by the workman while the wheel of stone, emery, or steel is revolving, a thin stream of sand and water being allowed to trickle on the cutting surface from a can and spout fixed above. "Etching" is effected by coating the article with wax, then etching the design with a steel point or needle, and afterwards exposing the article to acid, which acts upon those parts whence the wax has been removed. "Engraving" is a kind of cutting. It is obvious that as these operations are effected by hand the glass so treated is proportionately dearer than that decorated by being simply cast in a mould so as to imitate cutting. **View-ware**—articles of glass, china, and earthenware decorated with local or other views—will be found to sell well in some places, such as sea-side and pleasure

resorts; and a trade may occasionally be done at a good profit in Vases and other fancy goods, the cheaper kinds of which are imported largely from the Continent.

Toys are chiefly made in Thuringia, Saxony, and other parts of Germany; a good many also come from Switzerland. The goods of this kind imported from the Continent reach many millions a-year in value.

Of Hardware some few articles are commonly stocked in the trades for which these hints are intended, and while a full range

Hardware. of Ironmongery may be out of the question, such common household goods as saucepans, buckets, tins, lamps, &c., may be handled without great difficulty. Of lamps we have already spoken in a previous chapter. In dealing with such lines as these, it is well to "mark off" the goods at the earliest possible moment, writing on the parcel containing them, or on a ticket attached to the article itself, such particulars as the date of invoice, initials of wholesaler, a specification of the article sufficient for re-ordering, list (or cost) and retail prices for single articles or for quantities, as may be necessary. Plain figures should be used for the retail price, and private marks for net cost and list. Note particularly whether all the parts, or if not, which, are included; and take care that fitting parts, such as the burners of lamps, do not get misplaced. It may be observed for the tyro's guidance that several wholesale firms which supply china, &c., also supply lamps and other goods stocked by oilmen, so that a perusal of their catalogues will be generally worth while.

Perhaps it may be well to mention, for the benefit of Stores' proprietors or distributors "of a larger growth", who, maybe,

Pistols. employ skilled assistants to attend to a hardware branch of their business, that if such goods as pistols should happen to be stocked (or taken over perhaps from a predecessor), the law now attaches special responsibilities to such a trade. The Pistols Act, which came into operation in 1903, has been enforced in regard to transactions by post.

The Seed Trade is one which, if properly managed, will bring in good profit to the retailer. Thus, a popular cabbage seed which

Garden Seeds. sells readily at sixpence an ounce may usually be bought from the wholesaler at about four shillings a pound.

The season lasts practically from January to September, and the

trade involves no great trouble, as the seeds can be bought and sold in pretty packets if desired, although, of course, the better profit usually attaches to buying them in bulk and repacking in penn'orths or other small quantities. Such flower-seeds as asters, carnation, convolvulus, forget-me-not, godetia, lobelia, lupin, marigold, mignonette, musk, nasturtium, nicotiana, pansy, phlox, poppy, &c., and such vegetables as beans, peas, lettuce, onions, and radishes are always readily saleable; and various sweet and medicinal herbs, such as angelica, sage, horehound, &c., can also be had in handy form. Good wholesale houses subject their seeds to severe trials and tests, so that quality can be secured if care be used in selecting the wholesale supplier. If seed is left over beyond the season, store it in tin trunks or closed metal bins so as to be safe from vermin, and it will usually retain vitality for a sufficient time—beet and mangold, for instance, will keep good, it is said, for as long as eight or ten years! By way of test, take a small sample and place in a box under glass, and a warm atmosphere will soon bring out signs of life if any be left, in which case they may properly be mixed with new seed.

The sale of seeds is regulated by the **Adulteration of Seeds Act**, 1869, as amended by that of 1878, the effect of which is to forbid under penalty the “killing” or “dyeing” of seeds or the selling or causing to be sold any killed or dyed seeds. Seed Law.

To “kill” seeds is defined as destroying by artificial means the vitality or germinating power of such seeds; and to “dye” them, as “to apply to seeds any process of colouring, dyeing, or sulphur smoking”. On the wholesale seed market the following are the recognized average weights per quarter of the seeds named:—Foreign canary-seed, 464 lbs. Riga Wholesale Seed-Weights.

and Dutch hemp-seed, 336 lbs. Linseed, Black Sea, 424 lbs.; Bombay, 416 lbs.; Argentine, 416 lbs.; Calcutta bags, 164 lbs.; pockets, 41 lbs. Feed millet, 480 lbs. White bird millet, 416 lbs. Rape-seed, Black Sea, 424 lbs.; East India, 416 lbs. English canary-seed, linseed, mustard-seed, rape-seed are sold per imperial measure of 8 bushels per quarter; and caraways, coriander, English and foreign clover seeds, ryegrass, lucerne, trefoil, poppy-seed, &c., are generally sold by the cwt. of 112 lbs. English beans average 496 lbs. per imperial quarter; Egyptian, 480 lbs.; foreign,

small and haricot, 504 lbs. Peas, all home-grown and foreign kinds, 504 lbs. per imperial quarter, London wholesale weights.

The **Sale of Fertilizers and Feeding Stuffs** is regulated by the Act of that name, of 1893, which contains provisions whereby on the sale of such articles a *warranty* is implied, and this is enforced by taking official samples and testing the quality of a fertilizer or feeding stuff. Every person who sells a fertilizer (*i.e.* any article sold for use as a fertilizer of the soil, which has been manufactured or subjected to any artificial process in the United Kingdom, or imported from abroad), or a feeding stuff (*i.e.* any article sold for use as food for cattle, which has been artificially prepared), must give the purchaser an invoice stating the name of the fertilizer or the feeding stuff, as the case may be, and certain particulars as to its composition. This invoice is to have effect as a warranty by the seller of the statements contained therein. This provision does not apply, as regards fertilizers, to a sale where the whole amount sold at the same time weighs less than half a hundredweight. Similarly, any statement by the seller of the percentages of nutritive and other ingredients contained in any feeding stuff, made in an invoice or in any circular or advertisement descriptive of such feeding stuff, is to have effect as a warranty by the seller. The seller of any feeding stuff is, moreover, considered as giving an implied warranty (*a*) that the article is suitable for feeding purposes, and (*b*) that where a feeding stuff is sold under a name or description implying that it is prepared from certain substances, it is pure, *i.e.* is prepared from those substances only. The **Invoice** which must be given by the seller of a fertilizer must state—

The name of the article, and whether it is an artificially compounded article or not, and what is at least the percentage of the nitrogen, soluble and insoluble phosphates, and potash, if any, contained in the article, and this invoice shall have effect as a warranty by the seller of the statements contained therein.

And the invoice which the Act requires to be given when an artificially-prepared food for cattle is sold must state—

The name of the article, and whether it has been prepared from one substance or seed, or from more than one substance or seed, and this invoice shall have effect as a warranty by the seller of the statements contained therein.

For the purposes of the Act the expression “cattle” means bulls, cows, heifers, calves, sheep, goats, swine, and horses. The

purchaser of such articles can himself have them analysed and set the law in motion.

13. FOOD LAWS

Without wasting time upon *useless* history, it is of interest to a grocer who takes a proper pride in his trade to recall that in the seventeenth century and earlier the Wardens and Court of the London "Company of Grocers" had the power of committing to prison any individuals guilty of vending damaged or adulterated goods which came within their jurisdiction, and several instances in which this power was exercised are recorded in Baron Heath's "Account" of that worshipful Company. All druggists, confectioners, tobacconists, and tobacco-cutters, as well as grocers, were included under this control "as having", quoth Ravenhill, "been branched out of and bred by grocers"; and the Wardens, by privilege and ancient usage, could enter the warehouses and shops of all who follow these trades to inspect goods, prevent adulteration, confiscate adulterated articles, and assay weights. Heath says there are frequent entries in their records to show that they regularly discharged this part of their duty. The spurious material was always seized; specific cases are on record where pepper, ginger, comfits, sugar, drugs, &c., were so confiscated. Certain "comfit"-makers who had mixed starch with their sugar were (1571) bound over "that they shall not hereafter make any biskitts but with clere suger onlie"; and in 1616 there is an instance of an apothecary being committed by the Wardens to the Poultry Compter for "being found very unfitt in making of compositions and confections".

Grocers and
Adulteration.

These powers of supervision fell into disuse, and it was the prevalence of adulteration in all kinds of food and drugs in the middle of the last century which led to the passing of the Adulteration Act, 1860, and an amending Act, 1872. These Acts were revised and improved by the important measures of 1875 and 1879, under which the Sale of Food and Drugs Acts took the main form known to the grocer of to-day, and the effect of these and amending Acts since passed has undoubtedly been to restrict adulteration within limits that are very small compared

with what they were. "Sand in sugar", as we have elsewhere remarked, was probably never much more than a myth, for the grittiness of such an adulterant would reveal itself to any housewife; but *stone* in sugar has been the subject of prosecution, and this pretty well illustrates the change in adulteration practices of late years—the adulteration is the work of the unscrupulous manufacturer, and the too-clever chemist, rather than the retailer.

John Bright's phrase, that adulteration is "a form of competition", is true enough; it is not infrequently adulteration, practised by the manufacturer, that enables the unscrupulous The Modern Offender. "cutter" to undersell his more honest competitor who sells pure goods; but in many cases the retailer knows no more than that the cheaper article *is* cheaper, and does not enquire too closely into the why and wherefore of the cheapness. As a writer in *The Times* said in 1903, adulteration has nowadays "risen almost to the dignity of an exact science", and "the sophistication is practised almost entirely by the manufacturer on the large scale"; the result of the exact science being "that certain large companies trade almost entirely in 'faked' products, are able to employ the highest legal talent to drive the proverbial coach and horses through the Food and Drugs Act, and can even influence Parliament itself". According to this writer, "there are only three important forms of adulteration now practised by the retailer, namely, the substitution of margarine for butter, of chicory for coffee, and of cotton-seed or other cheap oil for olive oil: the manufacturer does the rest".

Note, however, that it is the retailer, and not his wealthier suppliers, who has in the first instance to bear the brunt of prosecutions for the sale of adulterated goods; wherefore the imperative need that he should understand something of the laws which deal with the Sale of Food.

The administration of the Food Laws, as most of our readers know, is now no longer the concern of the trade authorities, but Food Law Administration. of the "local authorities" and the Government. Locally there are the inspectors appointed by the local councils, watch committees, county councils, or other authorities, also the police; at the ports are the Customs officers, who can take samples of imported goods; officers of the Board of Agriculture and Fisheries are also engaged in itinerant work;

THE COMMERCIAL SALE-ROOMS, MINCING LANE

It is hardly necessary to explain to any member of the grocery trade that Mincing Lane, running out of Eastcheap to Fenchurch Street, is the most famous grocery street in the universe. Although not always the special abode of the grocery firms, it has been connected with the trade since the earliest times in which the English grocery trade has been known to history, being in the heart of the oldest part of London. In the grocery trade of to-day it is, of course, "the Lane", and is commonly so termed. The Commercial Sale-rooms are a group of rooms built by a limited company to suit the special requirements of the regular sales of tea, spices, and other groceries. The exterior is not imposing, any more than is the appearance of the hatless gentlemen who haunt "the Lane" and the sales; but the rooms, like the gentlemen in question, see a vast amount of business in the course of a year.



and at the top of the inspection machinery are the Local Government Board, the Board of Agriculture and Fisheries, or in some instances even the Treasury. Throughout the country are public analysts to report upon samples, and at Clement's Inn Passage in London (formerly Somerset House) is the Government Laboratory, to which, although it is by no means an Analytical Court of Appeal, much analytical work is referred, its business being largely in connection with the Revenue Departments, as well as in conducting analyses of samples "referred" by magistrates under the Sale of Food and Drugs Acts. The arrangements with regard to sampling under those Acts vary very greatly, since they are in certain particulars under the control of the local authorities. So far as they are fixed by the law we shall explain them presently, but the practice of his particular local authority in such matters as admit of their discretion is a point on which each reader will do well to inform himself. Thus it is the practice of certain local authorities to take samples under the Sale of Food and Drugs Acts without any of the formalities required by those Acts. Women and children are sent into the shops to purchase such samples in quite an informal way, with the object of discovering from the samples which traders, if any, are guilty of fraudulent practices. Upon samples so taken legal proceedings cannot be founded, for the authority prosecuting would be out of court at once; but when one of the samples is found Sampling. to be adulterated, it goes without saying that further samples are likely to be taken of the same article at the same shop with the usual formalities. In some cities this practice of preliminary sampling enables the Watch Committee or Health Committee to admonish a trader and give him a chance of amending his ways before visiting him with all the rigours of the law.

But in any case, whether the purchaser of samples for official inspection be detected or undetected by the trader, he need not—unless his conscience bewrays him when he recognizes the inspector—fall into such a frenzy of terror and anger as to follow the foolish example of some who have figured in police courts, who seized a bacon-knife or whatever weapon was handy and made the unlucky sample-collector fly for his life! Apart from the liability to heavy punishment thus incurred, nothing could be more idiotic than to obstruct in any way an official who is merely doing his duty, even

if the seller feels that by fault or negligence he has really been "caught". He should note carefully what takes place, in order that his advisers afterwards may learn whether or not the legal formalities were complied with; and if he has any misgivings he should lose no time in communicating with his wholesale supplier, the secretary of the local grocers' association, or his own solicitor, or all of these, as the case may be.

What, then, are the laws which are enforced upon the retail grocer and provision-dealer by means of this process of **Important Acts.** sampling his goods and analysing them, and perhaps prosecuting him as the sequel? They are, mainly, the

Sale of Food and Drugs Acts, 1875-1899;

Margarine Act, 1887;

Merchandise Marks Act, 1887.

Other Acts there are not a few which concern the trader, as is elsewhere explained (for instance, those relating to Bread, Seeds, Fertilizers, &c.); but these are the important laws specially relating to the purity and genuineness of Groceries and Provisions.

With regard to **Coffee** and **Tea**, there are one or two special statutes still unrepealed which may be mentioned before we consider the important group above named. Thus the Act 5 Geo. I, cap. 11, sec. 23, makes reference to the practice of "divers evil-disposed persons" who, at the time or soon after the roasting of coffee, made use of water, grease, butter, or such like materials,

Adulterating Coffee. "whereby the same is rendered unwholesome and greatly increased in weight, to the prejudice of His Majesty's revenue and the health of his subjects, and to the loss of all honest and fair dealers in that commodity". Accordingly it was enacted that from and after March 25, 1719, any person who should make use of any material to "increase the weight or damnify and prejudice the said coffee in its goodness" should forfeit £20 for every offence; a like penalty being imposed also upon any trader or dealer knowingly buying or selling such coffee.

A few years later, the Act 11 Geo. I, cap. 30, sec. 9, made £100 the penalty on coffee-roasters who used butter, lard, grease, water, or other materials to increase the weight; while sec. 5 of the same Act decreed that forfeiture and a penalty of £100 should be incurred by any person **counterfeiting or adulterating**

Tea with terra-japonica (catechu), or any drug or drugs whatsoever, or any leaves other than leaves of tea, or other ingredients whatsoever. Apparently this sophistication of tea was troublesome in the early part of the eighteenth century, for Mr. Bartley's book on *The Adulteration of Food* quotes the following from an Act 4 Geo. II, cap. 14:—

Adulterating
Tea.

And whereas several ill-disposed persons do frequently dye, fabricate, or manufacture very great quantities of sloe leaves, liquorish leaves, and the leaves of tea that have been before used, or the leaves of other trees, shrubs, or plants in imitation of tea, and do likewise mix, colour, stain, and dye such leaves, and likewise tea, with terra-japonica, sugar, molasses, clay, logwood, and other ingredients, and do sell and vend the same as real tea, to the prejudice of the health of His Majesty's subjects, the diminution of the revenue, and to the ruin of the fair trader . . . such persons [*i.e.* sellers and dealers] shall respectively, for every pound of such leaves so dyed, fabricated, or manufactured in imitation of tea, and for every pound of such mixed, coloured, stained, or dyed leaves or tea, forfeit the sum of £10.

By the time of the Act 17 Geo. III, cap. 29, these frauds of fabricating spurious tea had so increased that the preamble of that Act speaks of "great quantities" of such tea being sold, and copperas is mentioned among the ingredients used. The Act therefore levelled its guns at the dyers and fabricators as well as the vendors, and made them liable to a penalty of £5 for every pound of the spurious stuff, with imprisonment in default of payment. Moreover, by this Act, ever since 1777 any person having in possession more than 6 lbs. of sloe leaves, or the leaves of ash, elder, or any other tree, shrub, or plant, green or manufactured, has been liable to a fine of £5 per lb. of such leaves if unable to prove to a justice's satisfaction that the leaves were gathered with the consent of the owners of the trees and not for the purpose of manufacturing tea with them!

Although modified in certain respects by subsequent legislation the foregoing measures are still in force, and might at any time be put into operation just as is the famous law of Charles the Second against Sunday trading, under which traders are constantly being fined even to-day.

In reference to the **counterfeiting of Coffee** there are special regulations. Pure coffee and pure chicory may be sold without interference from the law. Mixtures of pure coffee and pure chicory may also be sold, providing the package bears a declaratory label as required by the Sale of Food and Drugs Acts,

to be presently considered. But persons who prepare, manufacture, import, sell, or keep for sale any article or substance in imitation of, or as a substitute for, coffee or chicory, or any mixture of such article or substance with coffee or chicory, come under certain provisions of the Customs and Inland Revenue Act, 1882. By Section 5 of that Act an Excise duty of a halfpenny is imposed upon every quarter of a pound of such an article, substance, or mixture, and the Inland Revenue Commissioners (1895) point out in reference thereto:

Coffee,
Chicory, and
Substitutes.

By Section 6 it is provided that no such article, substance, or mixture shall be sold, or exposed for sale, or be offered or kept ready for sale, or be delivered out of the custody or possession of any preparer, manufacturer, or importer thereof, except under the following conditions:—(a) The article, substance, or mixture is to be placed in packets, each containing a quarter of a pound, or any number of quarters of a pound. (b) Each such packet shall have affixed thereto a label or labels, which shall not have been before used, denoting the proper amount of duty payable upon such packet, according to the weight thereof. (c) The label or labels are to be affixed so that the whole thereof shall adhere to the packet, and so that the packet cannot be opened without tearing or destroying the label or labels. (d) Where more than one label is affixed to any packet, the labels are to be affixed so that every label shall be wholly or partially visible. (e) Every packet containing or purporting to contain coffee with any other article or substance mixed therewith is to have affixed thereto a label denoting, in letters of not less size than the largest letters affixed to or imprinted on such label, the proper names of the several articles or substances of which such mixture is composed. (*These labels are not provided by the Commissioners.*) The penalty for failure to comply with any of the above conditions is £20, and for having in possession any label provided under the Act which has been before used, or any portion of such a label, whether loose or affixed to a packet, is £100. The labels provided by the Commissioners for denoting the duty imposed by the Act are of two denominations, viz.: one halfpenny and one penny each, and are issued in sheets containing forty in each sheet. They can be obtained on application and payment of the duty from the Comptroller of Stamps and Stores at Somerset House, London, and from the several collectors of Inland Revenue in the country.

To complete the statement of the law as to Tea, in so far as this article of food is treated exceptionally, we may quote here the following “special provision as to tea” from the Food and Drugs Act of 1875, being the 30th and 31st sections of that measure:—

Tea at
the Ports.

All tea imported as merchandise into and landed at any port in Great Britain or Ireland shall be subject to examination by persons to be appointed by the Commissioners of Customs, subject to the approval of the Treasury, for the inspection and analysis thereof, for which purpose samples may, when deemed necessary by such inspectors, be taken and with all convenient speed be examined by the analysts to be

so appointed; and if upon such analysis the same shall be found to be mixed with other substances or exhausted tea, the same shall not be delivered unless with the sanction of the said commissioners, and on such terms and conditions as they shall see fit to direct, either for home consumption or for use as ships' stores or for exportation; but if on such inspection and analysis it shall appear that such tea is in the opinion of the analyst unfit for human food, the same shall be forfeited and destroyed or otherwise disposed of in such manner as the said commissioners may direct.

Tea to which the term "exhausted" is applied in this Act shall mean and include any tea which has been deprived of its proper quality, strength, or virtue by steeping, infusion, decoction, or other means.

Besides tea, **Other Foods at the Ports** may be examined by the Commissioners of Customs under the Food and Drugs Act of 1900, and fines of £20 for first offence, £50 for second offence, or £100 for any subsequent offence are incurred ^{Imported Foods.} by persons importing into the United Kingdom any of the following articles:—

(a) Margarine or margarine-cheese, except in packages conspicuously marked "Margarine" or "Margarine-cheese", as the case may require; or

(b) Adulterated or impoverished butter (other than margarine) or adulterated or impoverished milk or cream, except in packages or cans conspicuously marked with a name or description indicating that the butter or milk or cream has been so treated; or

(c) Condensed separated or skimmed milk, except in tins or other receptacles which bear a label whereon the words "Machine-skimmed Milk" or "Skimmed Milk", as the case may require, are printed in large and legible type; or

(d) Any adulterated or impoverished article of food to which Her Majesty may by Order in Council direct that this section shall be applied, unless the same be imported in packages or receptacles conspicuously marked with a name or description indicating that the article has been so treated.

Under this section (1) of the Food and Drugs Act, 1899, the "importer" is defined as including "any person who, whether as owner, consignor or consignee, agent or broker, is in possession of, or in any wise entitled to the custody or control of, the article"; and for the purposes of the section an article of food is—

Deemed to be adulterated or impoverished if it has been mixed with any other substance, or if any part of it has been extracted so as in either case to affect injuriously its quality, substance, or nature.

Provided that an article of food shall not be deemed to be adulterated by reason only of the addition of any preservative or colouring-matter of such a nature and in such quantity as not to render the article injurious to health.

Unless they are importers our readers are not concerned with the procedure adopted by the Customs authorities, but briefly, it is that the officers divide the samples taken into three parts—one for the

importer, one for the Government laboratory, and one retained; and if it is found that a consignment of food is adulterated, the authorities furnish the Board of Agriculture and Fisheries with the importer's name and whatever they know as to the destination of the consignment, so that it may be traced and further proceedings taken if necessary.

Thus we come to the inland administration of the important group of Acts already mentioned, the Food and Drugs Acts, Margarine Act, and Merchandise Marks Act.

The **Sale of Food and Drugs Acts, 1875 to 1899**, is now the correct collective title for the Sale of Food and Drugs Act, 1875; the "**Food**" and Sale of Food and Drugs Act Amendment Act, 1879; "**Drug**". the Margarine Act, 1887; and the Sale of Food and Drugs Act, 1899. We propose to explain how the laws here grouped affect the shopkeeper.

First of all we have the definition of "**food**" in the following section of the Act of 1899:—

26.—For the purposes of the Sale of Food and Drugs Acts the expression "food" shall include every article used for food or drink by man, other than drugs or water, and any article which ordinarily enters into or is used in the composition or preparation of human food, and shall also include flavouring matters and condiments.

This enlarged the definition of "food" given in the Act of 1875, but the latter's definition of "**drug**" stands:

The term "drug" shall include medicine for internal and external use.

These definitions are of importance, since it is often a question of fact whether an article that is the subject of a prosecution is a "food" or a "drug", or not. Thus it has been held that **Bees'-wax** is not a drug, therefore is not subject to the Acts. **Baking-powder** was previously to 1900 held not to be a food, but under the wider definition now in force it would be included. The very wide scope of the definition of "food" brings under the Acts practically everything the grocer sells in the way of food and drink save aerated waters; and supplemented as these Acts are by the Merchandise Marks Act, there is very little of a grocer's, provision-dealer's, or oilman's business that is not under efficient legal control in the interests of the public.

All food or drugs, whether imported or not, are subject to the

law of adulteration as defined by the Food and Drugs Act of 1875 in the following sections [for clearness we omit the penalties]:—

What is
Forbidden.

3. No person shall mix, colour, stain, or powder, or order or permit any other person to mix, colour, stain, or powder, any article of food with any ingredient or material *so as to render the article injurious to health*, with intent that the same may be sold in that state, and no person shall sell any such article so mixed, coloured, stained, or powdered. . . .

4. No person shall, except for the purpose of compounding as hereinafter described, mix, colour, stain, or powder, or order or permit any other person to mix, colour, stain, or powder, any drug with any ingredient or material *so as to affect injuriously the quality or potency of such drug*, with intent that the same may be sold in that state, and no person shall sell any such drug so mixed, coloured, stained, or powdered. . . .

5. Provided that no person shall be liable to be convicted under either of the two last foregoing sections of this Act in respect of the sale of any article of food, or of any drug, if he shows to the satisfaction of the justice or court before whom he is charged that he did not know of the article of food or drug sold by him being so mixed, coloured, stained, or powdered, as in either of those sections mentioned, and that he could not with reasonable diligence have obtained that knowledge.

6. No person shall sell to the prejudice of the purchaser any article of food or any drug which is *not of the nature, substance, and quality of the article demanded* by such purchaser. . . . Provided that an offence shall not be deemed to be committed under this section in the following cases; that is to say—

(1) Where any matter or ingredient not injurious to health has been added to the food or drug because the same is required for the production or preparation thereof as an article of commerce, in a state fit for carriage or consumption and not fraudulently to increase the bulk, weight, or measure of the food or drug, or conceal the inferior quality thereof;

(2) Where the drug or food is a proprietary medicine, or is the subject of a patent in force, and is supplied in the state required by the specification of the patent;

(3) Where the food or drug is compounded as in this Act mentioned;

(4) Where the food or drug is unavoidably mixed with some extraneous matter in the process of collection or preparation.

7. No person shall sell any compound article of food or compounded drug which is not composed of ingredients in accordance with the demand of the purchaser [applies mainly to dispensing chemists].

8. Provided that no person shall be guilty of any such offence as aforesaid in respect of the sale of an article of food or a drug mixed with any matter or ingredient not injurious to health, and not intended fraudulently to increase its bulk, weight, or measure, or conceal its inferior quality, *if at the time of delivering such article or drug he shall supply to the person receiving the same a notice, by a label distinctly and legibly written or printed on or with the article or drug, to the effect that the same is mixed*. [This label is further dealt with in the Act of 1899; see *post*.]

9. No person shall with the intent that the same may be sold in its altered state without notice, abstract from an article of food any part of it so as *to affect in-*

juriously its quality, substance, or nature, and no person shall sell any article so altered without making disclosure of the alteration. . . .

[Section 27 adds: "And every person who shall wilfully give a label with any articles sold by him which shall falsely describe the article sold shall be guilty of an offence under this Act, and be liable to a penalty not exceeding £20".]

We have emphasized by italics the most important words demanding the reader's attention, but the whole of the above sections should be carefully studied. Next we have to show how the foregoing enactments of 1875 have been extended or modified by the subsequent statutes. The amending Act of 1879 says:—

2. In any prosecution under the provisions of the principal Act for selling to the prejudice of the purchaser any article of food or any drug which is not of the nature, substance, and quality of the article demanded by such purchaser, it shall be no defence to any such prosecution to allege that the purchaser, having bought only for analysis, was not prejudiced by such sale. Neither shall it be a good defence to prove that the article of food or drug in question, though defective in nature or in substance or in quality, was not defective in all three respects.

Next comes **The Margarine Act, 1887**. This Act defines as "**butter**" the "substance usually known as butter, made exclusively from milk or cream, or both, with or without salt or other preservative, and with or without the addition of colouring-matter"; and as "**margarine**", "all substances, whether compounds or otherwise, prepared in imitation of butter, and whether mixed with butter or not," and

No such substance shall be lawfully sold except under the name of margarine and under the conditions set forth in this Act.

The "conditions set forth in this Act", which apply to "every person dealing in margarine, whether wholesale or retail, whether a manufacturer, importer, or as consignor or consignee, or as commission agent or otherwise", are now the following:—

6. Every package, whether open or closed, and containing margarine, shall be branded or durably marked "Margarine" on the top, bottom, and sides, in printed capital letters, not less than three-quarters of an inch square; and if such margarine be exposed for sale, by retail, there shall be attached to each parcel thereof so exposed, and in such manner as to be clearly visible to the purchaser, a label marked in printed capital letters not less than one and a half inch square, "Margarine"; and every person selling margarine by retail, save in a package duly branded or durably marked as aforesaid, shall in every case deliver the same to the purchaser in a paper wrapper, on which shall be printed in capital letters, not less than a quarter of an inch square, "Margarine". [The size of the letters is increased to half an inch by the Act of 1899; see *post*.]

7. Every person dealing with, selling, or exposing or offering for sale, or having in his possession for the purpose of sale, any quantity of margarine contrary to the provisions of this Act, shall be liable to conviction for an offence against this Act, unless he shows to the satisfaction of the court before whom he is charged that he purchased the article in question as butter, and with a written warranty or invoice to that effect, that he had no reason to believe at the time when he sold it that the article was other than butter, and that he sold it in the same state as when he purchased it, and in such case he shall be discharged from the prosecution, but shall be liable to pay the costs incurred by the prosecutor unless he shall have given due notice to him that he will rely upon the above defence.

8. All margarine imported into the United Kingdom of Great Britain and Ireland, and all margarine, whether imported or manufactured within the United Kingdom of Great Britain and Ireland, shall, whenever forwarded by any public conveyance, be duly consigned as margarine. . . .

9. Every manufactory of margarine within the United Kingdom of Great Britain and Ireland shall be registered by the owner or occupier thereof with the local authority from time to time in such manner as the Local Government Boards of England and Ireland and the Secretary for Scotland respectively may direct, and every such owner or occupier carrying on such manufacture in a manufactory not duly registered shall be guilty of an offence under this Act.

Respecting the administrative clauses of these Acts there is more to say in each case, but we are dealing for the present with the obligations the Acts impose upon the trader in carrying on his business. The Act of 1899 adds the following responsibilities and amends the Margarine Act:—

Butter, Cream,
Condensed Milk,
Margarine,
Cheese, &c.

4.—(1) The Board of Agriculture may, after such inquiry as they deem necessary, make regulations for determining what deficiency in any of the normal constituents of genuine milk, cream, butter, or cheese, or what addition of extraneous matter or proportion of water, in any sample of milk (including condensed milk), cream, butter, or cheese, shall for the purposes of the Sale of Food and Drugs Acts raise a presumption, until the contrary is proved, that the milk, cream, butter, or cheese is not genuine or is injurious to health, and the analyst shall have regard to such regulations in certifying the result of an analyst under those Acts. (2) Any regulations made under this section shall be notified in the *London* and *Edinburgh Gazettes*, and shall also be made known in such other manner as the Board of Agriculture may direct.

5. The provisions of the Margarine Act, 1887, as amended by this Act, shall extend to margarine-cheese, and shall apply accordingly with the substitution of "margarine-cheese" and "cheese" for "margarine" and "butter", and provided that all margarine-cheese sold or dealt in otherwise than by retail shall either be enclosed in packages marked in accordance with the Margarine Act, 1887, as amended by this Act, or be itself conspicuously branded with the words "margarine-cheese". ["Margarine-cheese" is defined as any substance, whether compound or otherwise, which is prepared in imitation of cheese, and which contains fat not

derived from milk. "Cheese" is defined as the substance usually known as cheese, containing no fat derived otherwise than from milk.]

6.—(1) Where under this Act or the Margarine Act, 1887, it is required that any package containing margarine or margarine-cheese shall be branded or marked, the brand or mark shall be on the package itself and not solely on a label, ticket, or other thing attached thereto. (2) The letters required to be printed on the paper wrapper in which margarine or margarine-cheese is sold shall be capital block letters not less than half an inch long and distinctly legible, and no other printed matter shall appear on the wrapper.

7.—(1) Every occupier of a manufactory of margarine or margarine-cheese, and every wholesale dealer in such substances, shall keep a register showing the quantity and destination of each consignment of such substances sent out from his manufactory or place of business, and this register shall be open to the inspection of any officer of the Board of Agriculture. (2) Any officer of the Board of Agriculture shall have power to enter at all reasonable times any manufactory of margarine or margarine-cheese, and to inspect any process of manufacture therein, and to take samples for analysis. (3) If any such occupier or dealer—(a) fails to keep such a register, or (b) refuses to produce the register when required to do so by an officer of the Board of Agriculture, or (c) fails to keep the register posted up to date, or (d) wilfully makes any entry in the register which is false in any particular, or (e) fraudulently omits to enter any particular which ought to be entered in the register, he shall be liable on summary conviction for the first offence to a fine. . . . (4) The provisions of section nine of the Margarine Act, 1887, relating to registration of manufactories shall extend to any premises wherein the business of a wholesale dealer in margarine or margarine-cheese is carried on. . . . [See Vol. III, ADULTERATION.]

8. It shall be unlawful to manufacture, sell, expose for sale, or import any margarine, the fat of which contains more than ten per cent of butter-fat, and every person who manufactures, sells, exposes for sale, or imports any margarine which contains more than that percentage, shall be guilty of an offence under the Margarine Act, 1887, and any defence which would be a defence under section seven of that Act shall be a defence under this section, and the provisions of the former section shall apply accordingly.

9. Every person who, himself or by his servant, in any highway or place of public resort sells milk or cream from a vehicle or from a can or other receptacle shall have conspicuously inscribed on the vehicle or receptacle his name and address, and in default shall be liable on summary conviction to a fine. . . .

11. Every tin or other receptacle containing condensed separated or skimmed milk must bear a label clearly visible to the purchaser on which the words "Machine-skimmed Milk", or "Skimmed Milk", as the case may require, are printed in large and legible type, and if any person sells or exposes or offers for sale condensed separated or skimmed milk in contravention of this section he shall be liable on summary conviction to a fine. . . .

Protection by Label or Notice is, it will be seen, specially provided for the retailer by Section 8 of the 1875 Act quoted above; while protection by **Disclosure** is specifically given in the 9th Section of that Act. The judicial interpretation of Section 6, however, shows that essentially the same defence is implied

also in the wording of that Section, the principal one of all the Acts. The vital point in any transaction covered by that and the other sections is obviously: Is the purchaser de- Labels and
Notices. ceived, and consequently is the purchase he makes to his prejudice or injury? The case of *Sandys v. Small* (1878) brought out this point. The defender had hung up where his customers could see it the notice "All spirits sold here are mixed—38 & 39 Vict. c. 63, Sections 8 & 9", and this was held by Chief-justice Cockburn and Mr. Justice Mellor to be sufficient, it being observed that "where the seller of an article brings to the purchaser's knowledge the fact that the article sold to him is not of the nature, substance, or quality of the article he demands, the sale is not to the prejudice of the purchaser" within the meaning of Section 6; and "If the alteration is brought to the knowledge of the purchaser, and he chooses to purchase it notwithstanding, it can never have been intended that such a transaction should be interfered with". Consequently when a purchaser asks for an article to which some standard of purity or strength may be supposed to apply, and the article sold to him is one that has been mixed or weakened or altered in some way so as not to correspond with such supposed standard, it is necessary to tell him so. This information may be conveyed to him verbally by a distinct statement; or, as specified in Section 8, by a distinct and legible label; or even by a notice exhibited in the shop if there is no doubt that he sees it; but the point is that he must be apprised so as to know what he is getting when he buys the article.

When "mixture" labels are used, under Section 8, note that the admixture must not be injurious to health nor intended fraudulently to increase the bulk, *e.g.* a mixture sold as "Coffee" must not, even when labelled, contain an undue proportion of chicory. When a proper label is used it is not necessary to give a verbal notice also, or to draw the purchaser's attention to the label. Whether the notice of mixture is distinctly and legibly written or printed is a question of fact in each case. On this point the Act of 1899 adds:—

12. The label referred to in section eight of the Sale of Food and Drugs Act, 1875, shall not be deemed to be distinctly and legibly written or printed within the meaning of that section unless it is so written or printed that the notice of

mixture given by the label is not obscured by other matter on the label. Provided that nothing in this enactment shall hinder or affect the use of any registered trade-mark, or of any label which has been continuously in use for at least seven years before the commencement of this Act; but the Comptroller-General of Patents, Designs, and Trade Marks shall not register any trade-mark purporting to describe a mixture unless it complies with the requirements of this enactment.

The above sections complete the tale of the responsibilities imposed upon the trader by the Sale of Food and Drugs Acts, 1875-1879, so far as handling goods is concerned; but there are other important matters, such as **procedure, selling to inspectors, responsibility of assistants, warranties, &c.**, which are also covered by this group of statutes. The full texts of the Acts can be purchased for a few pence from the King's Printers, for reference to special points of detail that happen to be required. To avoid confusing a reader unaccustomed to legal phraseology we have omitted all such sections or portions as could well be spared, and have collated those sections of the four Acts which overlap one another upon matters of importance to the retailer.

Procedure is laid down minutely in different parts of the Acts. It is now incumbent upon every local authority entrusted with the execution of the laws relating to the sale of food and drugs to appoint a **Public Analyst**, who has to furnish Analysts and Sampling. such proof of competency as may from time to time be required by regulation of the Local Government Board. *Any purchaser* of an article of food or of a drug can have such article analysed and certificate furnished by the public analyst of his district for a fee not exceeding half a guinea; or if there be no public analyst in the district he may submit the article to any outside analyst, in which case the fee is settled by mutual agreement. With regard to officials, the Act of 1875, sec. 13, says that—

Any medical officer of health, inspector of nuisances, or inspector of weights and measures, or any inspector of a market or any police-constable under the direction and at the cost of the local authority appointing such officer, inspector, or constable, or charged with the execution of this Act, may procure any sample of food or drugs—

and if he suspects adulteration, the officer must submit the sample for analysis. The Local Government Board and the Board of Agriculture have also special power to depute officers

to procure samples. In the special instances of **Butter** and **Cheese**, samples may be taken by inspectors without payment, as the 10th section of the Margarine Act empowers them to take, "without going through the form of purchase", samples of "any butter or substances purporting to be butter, which are exposed for sale and are not marked Margarine", and this power has been extended by the latest Act to Margarine-cheese, which, of course, would be sampled as unlabelled cheese. As regards all articles of food and drugs, the 1875 Act as amended by that of 1879 makes liable to a penalty any person who refuses to sell to an officer, inspector, constable, or the officer's agent or deputy, a reasonable quantity of any article of food or drug exposed to sale or on sale by retail on any premises, or in any shop or stores, or in any street or open place of public resort.

Beyond this, the power of sampling consignments *in transit* is given to medical officers, inspectors, and constables (not private persons or officers' deputies). In the case of milk this can be done without anybody's consent; in the case of Sampling en Route. any other article of food it can only be done with the consent of the purchaser or consignee to whom the goods are in course of delivery. Penalties are provided for refusal to allow the officer to take the sample under these conditions. When Margarine is consigned by public conveyance an officer or inspector can examine and take samples from any package if he has reason to believe that the provisions of the Act are infringed.

Naturally it will try the patience of some retailers to be obliged to give up samples of their goods without payment; and even where payment is tendered misgivings may arise and When Samples are Taken. cause a course of conduct which would place the shop-keeper in a false position. Besides what has been said as to penalties for refusing to sell, &c., he should note, therefore, the following:—

Any person who wilfully obstructs or impedes any inspector or other officer in the course of his duties under the Sale of Food and Drugs Acts, or by any gratuity, bribe, promise, or other inducement prevents, or attempts to prevent, the due execution by such inspector or officer of his duty under those Acts, shall be liable, on summary conviction, for the first offence to a fine not exceeding twenty pounds, for the second offence to a fine not exceeding fifty pounds, and for any subsequent offence to a fine not exceeding one hundred pounds.—1899 Act, sec. 16

But note that the Act also says on this point of selling samples that—

Where any article of food or drug is exposed for sale in an unopened tin or packet duly labelled, no person shall be required to sell it except in the unopened tin or packet in which it is contained.

The **routine** to be followed by the inspector is: to notify the seller his intention to have the sample analysed by the public analyst and to divide the article into three parts, “to be then and there separated, and each part to be marked and sealed or fastened up in such manner as its nature will permit”. He must then, *if required to do so*, deliver one of the parts to the seller or his agent. One of the other parts the officer sends to the Public Analyst, and this functionary must supply a certificate in a prescribed form. The certificate must be explicit; it must state the amount of the adulteration with quantities, not make a mere vague assertion. A copy of the analyst’s certificate must be supplied along with any summons that is founded upon it. No prosecution can be instituted after the expiration of twenty-eight days from the time of the purchase. The summons must state particulars of the alleged offence or offences, and the name of the prosecutor; and it cannot be made returnable (*i.e.* the trader summoned has not to appear at the court to answer it) in less than a fortnight after service.

The unpleasant incident of **the receipt of a summons** will at once put our trader to the necessity—even if he has not realized **A Retailer’s Defences.** it before, when told that the sample was to go to the Public Analyst—of considering what defence he has. Possibly his wholesale supplier may be responsible and a warranty can be produced; or he may have to fix the responsibility on his assistant; or he may have special defences under the Acts. These questions, therefore, must be considered in the light of the statutes themselves, and in doing so let us premise that the object of this chapter is to enable an honest trader to learn how to carry out the Food Laws, *not* to teach a dishonest person how he may evade them.

First of all we have the case where a trader feels morally certain that the goods he sold were genuine, but has had no warranty with them from the wholesaler. In that case he may tender himself or his wife to give evidence, and may question the

analyst's certificate, whereupon, under section 29 of the 1899 Act, the magistrates must send the third portion of the sample in dispute to the Government Laboratory—a course of procedure which has not infrequently shown that the local analyst was wrong and the accused retailer quite innocent.

Next we have the case where the retailer has had a **warranty of the genuineness** of the goods from the person who supplied him. The Act of 1875 says as to this:

25. If the defendant in any prosecution under this Act prove to the satisfaction of the justices or court that he had purchased the article in question as the same in nature, substance, and quality as that demanded of him by the prosecutor, and with a *written warranty* to that effect, that he had no reason to believe at the time when he sold it that the article was otherwise, and that he sold it in the same state as when he purchased it, he shall be discharged from the prosecution, but shall be liable to pay the costs incurred by the prosecutor, unless he shall have given due notice to him that he will rely on the above defence.

The Margarine Act, as we have already seen, also refers to the defence of warranty in Section 7, which says the offending retailer shall be convicted

Unless he shows to the satisfaction of the court before whom he is charged that he purchased the article in question as butter, and with a *written warranty or invoice* to that effect, that he had no reason to believe at the time when he sold it that the article was other than butter, and that he sold it in the same state as when he purchased it; and in such case he shall be discharged from the prosecution, but shall be liable to pay the costs incurred by the prosecutor, unless he shall have given due notice to him that he will rely upon the above defence.

The Act of 1899 says further:

20.—(1) A warranty or invoice shall not be available as a defence to any proceeding under the Sale of Food and Drugs Act unless the defendant has, within seven days after service of the summons, sent to the purchaser a copy of such warranty or invoice, with a written notice that he intends to rely on the warranty or invoice, and specifying the name and address of the person from whom he received it, and has also sent a like notice of his intention to such person. (2) The person by whom such warranty or invoice is alleged to have been given shall be entitled to appear at the hearing and to give evidence, and the court may, if it thinks fit, adjourn the hearing to enable him to do so. (3) A warranty or invoice given by a person resident *outside the United Kingdom* shall not be available as a defence to any proceeding under the Sale of Food and Drugs Acts, unless the defendant proves that he had taken reasonable steps to ascertain and did in fact believe in the accuracy of the statement contained in the warranty or invoice. (4) Where the defendant is a servant of the person who purchased the article under a warranty or invoice he shall, subject to the provisions of this section, be entitled to rely on section 25 of the Sale of Food and Drugs Act, 1875, and

section 7 of the Margarine Act, 1887, in the same way as his employer or master would have been entitled to do if he had been the defendant, provided that the servant further proves that he had no reason to believe that the article was otherwise than that demanded by the prosecutor.

Here arises, then, the question: **What is a Warranty?** Observe that only in the Margarine Act, sec. 7 (if we except the Sale of Fertilizers Act elsewhere mentioned, and with which ^{What is a} "Warranty"? we are not here concerned), is an *invoice* treated as tantamount to a warranty. Save under that Act an invoice and a warranty are not necessarily the same thing or equally effectual in shielding the retail seller. He may have bought goods just as he sells them, but in selling them he is responsible, while the person who sold them to him may not be so. Thus an invoice from a wholesaler designated as "lard" a substance which the seller sold as he bought it, but which proved to be adulterated lard. This invoice was held to be no warranty. But in *Hawkins v. Williams* (1895) an invoice on which were written the words "Guaranteed pure", with the seller's initials, was held to be a warranty. Mr. Justice Wright, in a case which came before him, observed that "what is wanted is some express individual representation from the seller to the buyer, forming part of the contract itself, and in writing". Lord Coleridge, C.J., in *Harris v. May*, said: "A person wishing to make himself perfectly safe in respect of the sale of a specific article, must show that he had a proper specific warranty in writing in respect of that article from the vendor". If on all his invoices of articles to which any question may possibly attach, the retailer has the words, "All goods named in this invoice are guaranteed genuine", with the signature or initials of the firm supplying same, and if the invoice names the goods properly, as "Butter", "Demerara Sugar", "White Pepper", or whatever they may be, he will be on the safe side. If the invoice names but one article, and the words "Guaranteed pure" or "Guaranteed genuine" appear on it with the vendor's initials, that is enough. But note carefully what the sections above say as to selling in the same condition and belief of purity; and also, when summoned, as to notifying the giver of the warranty, and sending to the prosecutor within seven days a written notice, with a copy of the warranty and the name and address of the person who gave it.

The possibility of a false warranty being given is also provided for, Section 27 of the 1875 Act stating (as amended 1899):

False
Warranty.

27. Any person who shall forge, or shall utter, knowing it to be forged for the purposes of this Act, any certificate or any writing purporting to contain a warranty, shall be guilty of a misdemeanour and be punishable on conviction by imprisonment for a term of not exceeding two years, with hard labour;

Every person who shall wilfully apply to an article of food, or a drug, in any proceedings under this Act, a certificate or warranty given in relation to any other article, or drug, shall be guilty of an offence under this Act, and be liable to a penalty not exceeding twenty pounds;

And every person who shall wilfully give a label with any article sold by him which shall falsely describe the article sold shall be guilty of an offence under this Act, and be liable to a penalty not exceeding twenty pounds;

whilst the Act of 1899 adds, in the sixth sub-section of Section 20 above quoted:

(6.) Every person who, in respect of an article of food or drug sold by him as principal or agent, gives to the purchaser a false warranty in writing, shall be liable on summary conviction, for the first offence, to a fine not exceeding twenty pounds; for the second offence, to a fine not exceeding fifty pounds; and for any subsequent offence to a fine not exceeding one hundred pounds, unless he proves to the satisfaction of the court that when he gave the warranty he had reason to believe that the statements or descriptions contained therein were true.

If a trader is convicted under the Act of having sold an adulterated article, and can prove that he bought that article as what he sold it for, and did not alter its condition, he has his remedy against the person (wholesale dealer, for example) who supplied him, and can recover from him the fine paid, costs, and damages. This is provided for by the following section of the 1875 Act:—

28. Nothing in this Act contained shall affect the power of proceeding by indictment, or take away any other remedy against any offender under this Act, or in any way interfere with contracts and bargains between individuals, and the rights and remedies belonging thereto.

Provided that in any action brought by any person for a breach of contract on the sale of any article of food or of any drug, such person may recover alone or in addition to any other damages recoverable by him the amount of any penalty in which he may have been convicted under this Act, together with the costs paid by him upon such conviction and those incurred by him in and about his defence thereto, if he prove that the article or drug the subject of such conviction was sold to him as and for an article or drug of the same nature, substance, and quality as that which was demanded of him, and that he purchased it not knowing it to be otherwise, and afterwards sold it in the same state in which he purchased it; the defendant in such action being nevertheless at liberty to prove that the conviction was wrongful, or that the amount of costs awarded or claimed was unreasonable.

If, on the other hand, the retailer pleads his warranty successfully, the person who gave the warranty becomes concerned with the following sub-section of Section 20 of the Act of 1899:—

(5.) Where the defendant in a prosecution under the Sale of Food and Drugs Act has been discharged under the provisions of section 25 of the Sale of Food and Drugs Act, 1875, as amended by this Act, any proceedings under the Sale of Food and Drugs Acts for giving the warranty relied on by the defendant in such prosecution, may be taken as well before a court having jurisdiction in the place where the article of food or drug to which the warranty relates was purchased for analysis as before a court having jurisdiction in the place where the warranty was given.

The **Assistant**, it will be seen from sub-section (4) of Section 20 of the Act of 1899 above quoted, is enabled to fall back upon a warranty in the same way as his employer. On the other hand, in the special instance of the Margarine Act, the employer is given the option of bringing the assistant before the court when he (the employer) is prosecuted for an offence which the assistant actually committed. This is dealt with by the fifth section of the Margarine Act:

5. Where an employer is charged with an offence against this Act he shall be entitled, upon information duly laid by him, to have any other person whom he charges as the actual offender brought before the court at the time appointed for hearing the charge, and if, after the commission of the offence has been proved, the employer proves to the satisfaction of the court that he had used due diligence to enforce the execution of this Act, and that the said other person had committed the offence in question without his knowledge, consent, or connivance, the said other person shall be summarily convicted of such offence, and the employer shall be exempt from any penalty.

Thus it behoves the assistant, equally with his employer, to be careful that the law is not transgressed, and if the employer has "used due diligence" the assistant only is responsible. Under the important Section 6 of the Act of 1875, however, the person prosecuted for transgression may be either the employer or the assistant, or an agent; but whether the one or the other is summoned is at the prosecutor's discretion. The employer (and this applies to limited companies as well as individuals) is responsible and may be prosecuted, and the defence that the assistant was the actual offender cannot be pleaded. Consequently it is necessary that assistants should be informed of the requirements of the law and instructed to comply with it. In many instances a summary of the Acts is exhibited in the shop, and branch managers and other assistants are advised directly or by circular

of special points arising from time to time. But even where an employer has called his assistants' attention to a posted notice as to observing the law, he is not allowed to shelter himself behind them. A retailer, therefore, cannot be too strict in making sure that those he employs carry out the law, or too careful that they understand it, and that the general system pursued in his shop or shops facilitates the proper observance. In short, "make it easy to do right and difficult to do wrong". It may be added that a useful pamphlet and various shop notices as to the Acts are published by the Federation of Grocers' Associations of the United Kingdom.

The **Merchandise Marks Act**, 1887 (and as amended by the Act of that name passed in 1891), is the important law under which the shopkeeper may be prosecuted for applying to goods *a false description*, such as selling American ham as "Scotch ham", Canadian bacon as "Wiltshire", china not made in Saxony as "Dresden china", or even for describing on a packet or an invoice a pound of tea and paper as a pound of "tea". The Act defines as being guilty of an offence against its provisions:

**False Trade
Description.**

(1.) Every person who (*a*) forges any trade-mark, or (*b*) falsely applies to goods any trade-mark or any mark so nearly resembling a trade-mark as to be calculated to deceive, or (*c*) makes any die, block, machine, or other instrument for the purpose of forging or of being used for forging a trade-mark, or (*d*) *applies any false description to goods*, or (*e*) disposes of or has in his possession any die, block, machine, or other instrument for the purpose of forging a trade-mark, or (*f*) causes any of the things above in this section mentioned to be done, shall, subject to the provisions of this Act, and unless he proves that he acted without intent to defraud, be guilty of an offence against this Act.

(2.) Every person *who sells or exposes for, or has in his possession for, sale, or any purpose of trade or manufacture, any goods or things to which any forged trade-mark or false trade description is applied*, or to which any trade-mark or mark so nearly resembling a trade-mark as to be calculated to deceive is falsely applied, as the case may be, shall, unless he proves (*a*) that having taken all reasonable precautions against committing an offence against this Act, he had at the time of the commission of the alleged offence no reason to suspect the genuineness of the trade-mark, mark, or trade description, and (*b*) that on demand made by or on behalf of the prosecutor he gave all the information in his power with respect to the persons from whom he obtained such goods or things, or (*c*) that otherwise he had acted innocently, be guilty of an offence against this Act.

Severe penalties both of fine and imprisonment are imposed upon offenders against this Act, and in any case every chattel, article,

instrument, or thing by means or in relation to which the offence has been committed, is forfeited. Section 3 of the Act defines "trade description" as meaning:

Any description, statement, or other indication, direct or indirect, (*a*) as to the number, quantity, measure, gauge, or weight of any goods; (*b*) as to the place or country in which any goods were made or produced; (*c*) as to the mode of manufacture or producing any goods; (*d*) as to the material of which any goods are composed; or (*e*) as to any goods being the subject of an existing patent, privilege, or copyright. The expression "false trade description" means a trade description which is false in a material respect as regards the goods to which it is applied, and includes every alteration of a trade description whether by addition, effacement, or otherwise, where that alteration makes the description false in a material respect.

The plain intention of the Act, of which these are the salient portions affecting our readers, is that a purchaser shall not be misled, but shall receive what he supposes himself to be purchasing. The Act has even been used against shopkeepers who misdescribe as "a pound of tea" what is in reality a pound of tea and paper, *i.e.* the wrapper of the tea.

14. SHOP AND TRADE LAW

In addition to the Food and Drugs, Merchandise Marks, Pharmacy, Poisons, and other Acts of Parliament which have been dealt with under the chapters severally concerned with them, there are many other laws of one kind and another which it is useful, and indeed important, for the grocer to know. Even the annual Finance Act, which passes into law the ukases of a Chancellor of the Exchequer, must not escape his purview, for it affects a grocer's contracts by enabling any new duty he pays to be charged by him in addition to his contract prices. The Public Health Acts deal with the storage and exposure for sale of various goods, and these being administered by the local authorities, particular local by-laws demand attention.

With regard to **Employees**, the essence of the **Shop Hours Act** is that no "young person"—a person under eighteen years of age—is allowed to be employed in or about a shop for more than seventy-four hours in a week, meal-times included. In every shop where such "young persons" are employed, a notification stating the number of hours in the week

Employees.

during which a young person may lawfully be employed in that shop, has to be kept exhibited in a conspicuous place, or a penalty is incurred. If the grocer has a gas-engine, or other machine worked by power, upon his premises, the **Factory Act** comes into play, and if any boy is employed, say in coffee-packing, he comes under the Act, and possibly may have to leave before the rest of the employees, under pain of the inspector's displeasure and the penalty of the law. The law also deals with the state of the premises, the safe-guarding of the employees against dangerous machinery (the local inspector will give information on these points), and the employer's liability in case the workmen meet with an accident.

The **Seats for Shop Assistants Act**, which, like the Shop Hours Act, is administered by the local authority, applies in shops where females are employed. The Act says that in all rooms of a shop or other premises where goods are actually retailed to the public, and where female assistants are employed for the retailing of goods to the public, the employer carrying on business in such premises shall provide seats behind the counter, or in such other position as may be suitable for the purpose, and such seats shall be in the proportion of not less than one seat to every three female assistants employed in each room.

Under the **Employment of Children Act, 1903** (which with some modifications applies to Scotland and Ireland as well as England), the "local authority" has power to make by-laws prescribing for children the age below which employment is illegal, the hours between which employment is illegal, and the number of daily and weekly hours which children may work. Unless varied by such a by-law the Act forbids the employment of a child under fourteen between the hours of nine in the evening and six in the morning, and declares that a child shall not be employed to lift, carry, or move anything so heavy as to be likely to cause injury to the child; nor shall be employed in any occupation likely to be injurious to his life, limb, health, or education, regard being had to his physical condition. Moreover, no child who is employed "half-time" under the **Factory and Workshop Act** is allowed to be employed in any other occupation; *e.g.* a shopkeeper's child who is a half-timer must not be employed to assist in the shop or otherwise after the half-time work.

The enforcement of **Shop Rules** by fines is a matter which

comes under the Truck Act, 1896, which should be borne in mind by employers contemplating such rules as have been quoted in vol. i. This Act declares it to be illegal to impose fines on assistants unless specified formalities are observed.

The employer is bound, when making such a contract as to fines, to give the assistant a copy of the contract or of the notice containing its terms; a register must be kept of any fines imposed, and this record, together with the contract itself or a true copy, must be open to the Inspectors of Factories.

A grocer's **liability for compensation** to his assistants in accidents depends upon the common law, and, under certain circumstances, the Workmen's Compensation Act. Accident Compensation. Thus under the common law a grocer is liable for an accident occurring to his servants through any gross negligence on his own part. If the servant becomes ill, and has to absent himself from work, the employer must continue to pay his wages, unless he gives him the usual and proper notice to terminate his engagement, in which case the wages continue until the expiration of the notice. Some authorities are of opinion that if the employer engages other assistance to do the work, while the assistant who is ill remains absent, the amount paid for such temporary assistance may be deducted from the wages due to the one who is ill; but this is very doubtful, and we cannot recommend an employer to put the theory to proof. The **Workmen's Compensation Act** is an important measure in the relations of employers and employed, for it provides that when a workman in the course of his work meets with an injury from which death results, the employer must pay to those who were wholly dependent on his earnings a sum which may be anything from £150 to £300; while in a case when the workman is not killed, but rendered totally or partly incapable of work, the employer must pay him a weekly allowance during his incapacity for work, and this may mean as much as £1 a week. The prior question arises, however, of whether the grocer's premises are such as come within the scope of the Act, and this depends on whether they come within the definition of a "factory" or a "warehouse", such as the Act applies to. Upon this question a very useful "opinion" was obtained from counsel (Mr. Arthur Powell, K.C.) in 1903 by the proprietors of *The Grocer*, and was to the following effect:—

1. If a retail grocer has on his premises any engine or motor operated by steam, gas, water, hot air, oil, electricity, clockwork, or other mechanical power, which drives machinery for roasting or grinding coffee, mixing tea, cleaning fruit, or doing anything else which is or is incidental to—(a) the making of an article or part of an article; (b) the altering, repairing, ornamenting, or finishing of any article; or (c) the adapting for sale of any article, such article being intended for sale; and manual labour is used (as it naturally must be) in any of these processes, his premises become a “factory” within the Factory Act and the Workmen’s Compensation Act. But machines driven by hand or treadle, or by animals (such as turnspit dogs) do not make the premises a factory; neither does a place become a factory merely because it has a power-driven hoist or lift. And if the premises are in two distinct blocks and the power-driven machinery is in one block only, that block is a factory and the other block is not.

2. The premises of a retail grocer who uses a part of them—such as a back room, cellar, upper floor, stable-loft, or small shed—for storing goods which in the ordinary course of his business he will want in his shop or retail trade, do not by such usage become a “warehouse” or a “factory” within the meaning of s. 104 of the Factory Act or the Workmen’s Compensation Act, or subject the grocer to liability under either of those Acts.

3. If a grocer simply uses his cellars for storing and/or bottling wine, &c., likely to be wanted for retail sale in his shop, this will not make his premises or even the cellars a “warehouse” within the Acts.

4. If the storehouse is a building separate, but comparatively small, and is used in a manner ancillary to the retail trade, it is not a “warehouse” within either of the Acts; but if it is of large dimensions, and goods are kept in it for storage or sale until a market be found for them, it is a “warehouse”, unless *Wilmott v. Paton*, *Law Reports*, 1902, 1 K.B. 237, was wrongly decided.

5. If a grocer keeps a “factory”, or has the use or occupation of a “warehouse”, within the meaning of these words in the Acts mentioned, all servants employed by him will be “workmen” entitled to compensation at his hands for injuries sustained “on, in, or about” that factory or warehouse, and “arising out of and in the course of the employment”.

In view of the risk and the uncertainty, many grocers prefer to insure against the Act. Insurance is also resorted to by way of protection against **drivers’ risks**. Observe that under the Workmen’s Compensation Act, notice of an accident must be given to an employer as soon as practicable after its happening.

The **Larceny Act**, 1901, made a considerable change in the law as to improper monetary dealings by agents, such as travellers, who are employed on commission. Previous to the passing of this Act it was possible for a defaulting traveller to escape on the technical plea that, being paid solely by commission, he was not a servant, and therefore could not be punished for “embezzlement”. The Act makes criminally punishable anyone who fraudulently

converts to his own use property or money that he receives on account of another.

We now come to the group of what may be called the **Laws of Selling**, so far as they concern the grocer. Here we have as a **Selling Goods.** basis the **Sale of Goods Act**, 1893, which consolidated the law—largely judge-made—then existent, but did not effect any remarkable changes. The law as to the sale of goods is somewhat different in Scotland from that which applies in England; but for the minutiae we must refer the reader to the Act itself, which, like any other Act that may be required, can be obtained for a small sum from the “king’s publishers”.

Where there is a contract for the sale of goods by description there is an implied condition that the goods shall *correspond with the description*; and if the sale be by sample, as well as by description, it is not sufficient that the bulk of the goods corresponds with the sample if the goods do not correspond with the description. When the buyer of goods makes known to the seller that he requires the goods for a particular purpose, so as to show that he relies on the seller’s skill or judgment, and the goods are such as it is in the course of the seller’s business to supply (whether he is the manufacturer or not), there is an “implied condition” that the goods shall be *reasonably fit for the purpose named*. If, however, the article is specified under a patented or other trade name, there is no implied condition as to its fitness for any particular purpose. Again, where goods are bought from a seller who deals in goods of that description (whether he be the manufacturer or not) there is an implied condition that the goods shall be of *merchantable quality*. But if the buyer has examined the goods there is no implied condition as regards defects which such examination ought to have revealed to him. There may also be an implied warranty or condition as to quality or fitness for a particular purpose owing to the usage of trade.

The **sale of goods by sample**, or by **sample and description**, is common in the grocery trade. The Act says that in the case of a **Sale by Sample.** contract for sale by sample—(a) there is an implied condition that the bulk shall correspond with the sample in quality; (b) there is an implied condition that the buyer shall have a reasonable opportunity of comparing the bulk with the sample; (c) there is an implied condition that the goods shall be free from

any defect, rendering them unmerchantable, which would not be apparent on reasonable examination of the sample. This applies to Great Britain and Ireland. In the case of sales by sample, if the bulk of the goods does not correspond with it, the buyer may refuse to receive such, and may keep the article any reasonable time to examine the same. In the absence of express stipulation the place of inspection is presumed to be the place of delivery; and if, after an inspection of a sample there, the buyer orders the goods to be sent to his sub-vendor, he cannot—as held by the Queen's Bench Divisional Court in the case of *Perkins v. Bell* (1893)—afterwards reject them. It is provided by Section 36 of the Act that, “unless otherwise agreed, when goods are delivered to the buyer and he refuses to accept them, having the right so to do, he is not bound to return them to the seller, but it is sufficient if he intimates to the seller that he refuses to accept them”. When a contract is for merchantable goods, and the sale is by sample which represents to the buyer a merchantable article and discloses no defect, and the goods are accepted as corresponding with the sample, the Exchequer Chamber held in the case of *Mody v. Gregson* (L.R. 4, Ex. 9) that there is still an implied warranty of the goods being merchantable as regards all such matters as cannot be judged of by the sample, just as there would be if the bulk had been inspected and defects could not thereby be ascertained. Lord Ellenborough decided at *Nisi Prius* in the case of *Hibbert v. Shee and Another* (1 Camp 113) that if on the sale of goods by sample the bulk does not accord with the sample, the buyer is not bound to accept or pay for them, even on an allowance being made for the inferiority, though that is the usage in the trade. In this instance, at a public sale, the defendants purchased from the plaintiff by sample sixteen hogsheads of sugar. On examining these sugars it was found that they by no means corresponded in colour with the samples, and in the opinion of the brokers who then saw them they were less valuable by five or six shillings a hundredweight. The plaintiff nevertheless required that the defendants should take the sugars on being allowed a compensation for the inferiority, and insisted that, according to the usage of the trade when samples have been drawn without fraud and the bulk notwithstanding proves inferior, brokers are to be called in to estimate the difference, and, the vendor making an

allowance for this, the purchaser must stand to his bargain. The defendants refused to accede to this proposal, as they alleged the sugars were unfit for the purpose for which they had bought them. The principle of the judgment in this case is assumed in many later cases, including one decided by the House of Lords on appeal from the Court of Session of Scotland.

The **Weights and Measures Act, 1878**, and the amending Act of 1889, impose upon the trader the duty of keeping proper weights and scales and of permitting their inspection. In many progressive towns no charge is made for the verification of weights and measures and weighing instruments if on examination these are found to be correct and duly stamped.

The **Weights and Measures (Metric System) Act, 1897**, made lawful the use in trade of metric weights or measures.

One of the legal points in shop practice which requires somewhat special attention is that of **weighing paper with goods**. It is legal to sell sugar weighed in paper, provided the purchaser does not object and does not provide anything in which to wrap it. Also it has been held to be legal to sell tea weighing, say, a pound with the package if the customer is told what he is getting. But the abuse of a convenient custom by using extra heavy paper, so as to secure an unfair profit, has led to many attempts to prevent the weighing of paper with any goods at all, proceedings being repeatedly taken under not only the **Weights and Measures Act**, but the **Merchandise Marks Act**, the latter on the plea that to describe a pound of tea-and-paper as "1 lb. of tea" is a false description under the terms of the Act. In the case of *Harris v. Allwood* (1892) a Wolverhampton grocer was fined for contravening Section 26 of the **Weights and Measures Act** by weighing the paper with tea, lump sugar, raisins, &c., and this conviction was appealed against. In the Divisional Court Mr. Justice Matthew said: "It was perfectly plain that this conviction must be quashed. There was no fraud here. To sell groceries weighed in paper was a practice universally understood all over the kingdom, and was a practice well known to buyers as well as to sellers. The purchaser here saw the goods weighed in the paper, and did not object, being quite content to follow the practice. How was it possible to say there was any fraud in such a case?" Mr. Justice Gainsford Bruce concurred, and the con-

viction was quashed accordingly. The High Court upheld the same principle in the "Northallerton" case of *Fanthorpe v. Lewis* in 1901. In 1903-1904 various grocers' associations published lists of weights for papers which they deemed suitable and fair, and intimated that want of conformity with these would forfeit the support of the association in case of proceedings. The Midland Council of Grocers' Associations put forward the following:—

Sugar and fruit papers	...	...	...	1-lb. size, 60 lbs. per ream.
"	"	...	...	1/2-lb. " 40 lbs. "
Grease-proof or parchment, suitable for wrapping butter, margarine, or lard	} 24 lbs. per ream.			
Tea and coffee papers	...	...	...	1-lb. size, to weigh 30 to the lb.
"	"	...	...	1/2-lb. " " 48 " "
"	"	...	...	4-oz. " " 5 " oz.
"	"	...	...	2-oz. " " 8 " "
"	"	...	...	1-oz. " " 10 " "
Sugar bags	...	...	...	1 lb. size (lump), 40 bags to the lb.
"	...	...	...	2-lb. " (moist), 38 " "
"	...	...	...	3-lb. " " 32 " "
"	...	...	...	4-lb. " " 21 " "
"	...	...	...	6-lb. " " 17 " "

The Manchester Grocers' Association considered some of these weights too light, and suggested the following, with tea and coffee papers as in the foregoing list:—

Sugar, fruit, &c.	Size, 20 × 28 inches.	Maximum, 60 lbs. per ream.
"	Sheet cutting: 4 1-lb. or 6 1/2-lb.	
Sugar bags	1-lb. lump.	Minimum, 31 bags to lb.
"	2-lb. moist.	" 30 "
"	3-lb. "	" 22 "
"	4-lb., 6-lb., 12-lb., and upwards:	equivalent weights.
Parchment	Size, 20 × 30 inches.	Maximum, 40 lbs. per ream.
"	For butter, lard, provisions, &c.	
Tea Demy	18 × 20 inches.	Maximum, 26 lbs. per ream.

Note that it is illegal to make your scales unjust by altering them even for convenience, *e.g.* you must not put a bag under the pan in weighing up tea. In 1899 it was held in *Lane v. Rendall* that putting the paper under the scoop in weighing rendered the scale "false or unjust" within the meaning of the Act.

County Court procedure is described in detail in so many popular manuals, cheap and easily accessible, that it need not

be detailed in this work. But a word may be said by way of caution as to the anterior process in debt-collecting, viz., that it is a criminal offence to use documents, &c., that are
County Courts,
Partners, &c. an imitation of a process of a County Court. Some people are very fond of using "Final Notice" demands, couched in formal-sounding legal jargon, and printed in official-looking form on blue paper, as a means of frightening debtors. When such notices carry their imitation of a court paper too far, their use becomes a criminal offence. Even when they do not, they frequently do more harm than good if a case comes before a judge, as the judges nearly always express strong disapproval. At the same time, there is no reason why a printed form should not be used, printed on blue paper or any other, if it be so worded as to do no more than arrest the debtor's earnest attention without creating a belief in his mind that it is an official document.

A word as to **Partners**—who are often found in grocery and provision businesses. Always, if possible, get the conditions of a partnership put in writing with the aid of a solicitor. Under the Partnership Act, 1890, a person entering a business as a partner is liable in England jointly with the other partners, in Scotland severally also, for the debts of the business incurred from the moment he enters it, but not for those incurred before. The liability continues after the partnership terminates, unless the retiring partner notifies his retirement by circular or otherwise to each person who has previously dealt with the firm, and advertised in the *London Gazette* or a representative trade journal in the particular trade concerned.

15. RAILWAY RATES

The **Law of Railway Rates** is found in the Railway and Canal Traffic Acts, 1854, 1873, and 1888; the General Rules of the Railway Commission and High Court; the Board of Trade Rules as to revised classification of merchandise traffic and revised schedules of maximum rates and charges; the several Acts of the Companies; and the Railway Rates and Charges Order

Confirmation Acts of 1891 and 1892. It is obvious that we are unable to deal with the subject in the detail required by the lawyer; we therefore content ourselves with offering a few general hints that may assist the trader. In the first place, railway companies as common carriers are bound to deliver the goods they carry at a reasonable time, in a reasonable manner, and at the proper place, but are not responsible for delay caused by circumstances beyond their own control. They are responsible for all losses not caused by the act of God, or the king's enemies, or by the "inherent vice of the thing carried". The 90th section of the Railway Clauses Act of 1845 makes it obligatory to charge all persons "equally" after the same rate "in respect of all passengers and all goods under the same circumstances". There must be no undue preference, and no reduced rates must be granted to one trader for large quantities, or regular consignments, or any other reason, unless they grant the same rates to any other person who offers the same advantages. Under the Railway and Canal Traffic Act of 1888, section 31—

The Law.

Whenever any person receiving or sending, or desiring to send, goods by any railway is of opinion that the railway company is charging him an unfair or an unreasonable rate of charge, or is in any other respect treating him in an oppressive or unreasonable manner, such person may complain to the Board of Trade.

For the purpose of ascertaining the rates chargeable to their local station, traders should note that goods are carried according to duly fixed and published rates, and that the application of these rates depends on the nature of the goods and other matters, as laid down in a general classification table. Under the Regulation of Railways Act, 1873, every railway and canal company is required to keep at each of its stations and wharves a book or books showing every rate, for the time being, charged from that station to any place to which they book (special contract rates included), and stating the distance from that station or wharf of every station, wharf, siding, or place to which any such rate is charged. Under the Railway and Canal Traffic Act, 1888, the book, table, or other document containing the General Classification of merchandise must similarly be kept at all stations. These two, the Book of Rates and the General Classification (copies, price 1s.), are required to be open, during all reasonable hours, for the inspection of any person without

*Rates and
Classes.*

payment of any fee. Classes A, B, and C apply to heavy goods or grain, &c., in bulk not less than 2 tons; while Classes 1, 2, 3, 4, and 5 are for lighter merchandise. There is also a select list of dangerous or precious goods which are carried only by special arrangement. The goods handled by our readers are so multifarious that some will be found in each of the five classes, as well as in Class C and the special class for explosives, &c. Moreover, there are two special lists of articles, "Groceries No. 1" and "Groceries No. 2", which may be sent at cheaper rates in large quantities, while yet others are specified as being consignable as "Mixed Groceries". There is a special list of goods, including many handled by the provision trade, which are carried at half the ordinary parcels rates if the trader signs a note agreeing to accept "owner's risk". Merchandise samples, again, are sent very cheaply at owner's risk; and it may sometimes be convenient to send them in this way rather than by post. Observe that when parcels of mixed goods are sent by rail they are charged at the scale applicable to the highest class of goods included. But as parcels of goods which weigh not more than 3 hundredweight are charged according to a scale for "Smalls", it may sometimes be a saving to send a mixed parcel of greater weight and pay for the whole at the highest-class rate as tonnage.

The trader should carefully study the various features of the Classification, rates, special rates, and rules as to quantities, &c., in order to know how to send or obtain his goods in the most economical way, and also to be able to detect errors and overcharges, which are not infrequent. For example, there are firms which habitually deliver their goods direct into the railway companies' hands, while again there are retail traders and others who find it convenient to cart their own goods from the station to the shop. In either case rebate for cartage can, as a rule, be obtained from the railway company, as the rates for Classes 1, 2, 3, 4, and 5 include a charge for collection and delivery within prescribed boundaries, unless the rate-book shows that the rate is a "station-to-station" rate only. "I cannot too strongly urge your readers to check their railway accounts," writes a trader; "mine is only a small one, but the errors and overcharges last year came to 6 per cent of the total." On certain goods the

rebate for non-cartage in London is as much as 4*s.* 2*d.* a ton—an amount which mounts up in a year's business. When in doubt, a payment "without prejudice" may be made under protest.

When goods are carried partly by land and partly by sea, and are bought "f.o.b.," dock dues as well as cartage charges may become allowable by the railway company as rebate. Railway companies which carry by sea as well as land are bound to specify, in the rate-books kept at the ports which they use, the proportion of any through rate appropriated to conveyance by sea, and these books, as mentioned above, can be inspected at a reasonable hour by any person without payment.

For **Checking Railway Accounts** keep a Receiving Book, which may be ruled in the following form:—

Date.	Carrier.	From.	Senders.	No. and Description.	Railway Weight.	Rate.	Amount.	Paid on.	Receiver's Remarks.	Re-weights.	Class.	Details.	Unpacker's Remarks.

The particulars given in the freight note should be copied into this book and the note then filed. When you are unable to check the details, sign the delivery sheet "not examined" (see vol. i, pp. 164-166). Draw the carman's attention to any noticeable breakage, and sign for the consignment as "in damaged condition". If the goods have been parted in transit, sign for what you receive as "part lot". If possible, check the weights on the delivery sheet by your own re-weighing before signing. On unpacking the goods let the unpacker enter in the Receiving Book the details of the last three columns. This should be done the same day that the goods are received, and all claims for breakages, shortages, pilferages, damages, or delays should be made at once, the goods being held for the carriers to inspect. See that you are not charged on carriage-paid goods. When the monthly account is rendered, check it by your Receiving Book. If any items are charged in it of which you have no record, write for proof of delivery. If consignments were delivered by the carriers in part lots, having been divided in

Checking.

transit for convenience, see that they are not charged separately. For example:—

No.	Date.	To Carriage of	From	Weight.				Rate.			
				tons.	cwts.	qrs.	lbs.		£	s.	d.
1	Aug. 14	2 Cads Tea	Peek, London .....	...	...	1	26	31/11	£	0	1
2	" 14	5 Chests Tea	Peek, London .....	...	5	3	0	31/11	0	9	5
3	" 17	1 Bag Meals	Keen, London .....	...	2	2	0	22/11	0	3	3
4	" 18	1 Bag Groats	Keen, London .....	...	2	2	0	22/11	0	3	4
5	" 20	10 Box Sultanias	Travers, London .....	...	2	2	0	27/8	0	4	0
6	" 20	1 Bag Castor	Travers, London .....	...	2	0	0	22/11	0	2	10

Nos. 1 and 2 should be charged as one lot, 6 cwts. 1 qr., at 31s. 11d. = 9s. 11d., or a saving of 9d. Nos. 3 and 4, parted in transit, should be 5 cwts., at 22s. 11d. = 5s. 9d., or a saving of 11d. Nos. 5 and 6, added together, would be 4 cwts. 2 qrs., at 27s. 8d. = 6s. 2d., or a saving of 8d. See that the charges are correct according to the authentic list of rates and charges from the stations where your goods are loaded. A *Railway Ready Reckoner* is useful for this checking. Also check the extensions and casting. If you do your own carting, claim rebate from carriers unless goods have been carried at station-to-station rate. If any carriage-paid goods are charged, debit charges to the senders of the goods. If goods are not declared, highest rates will be charged. See that these are correct. All claims for overcharges, breakages, and rebates should be deducted from the current month's accounts.

16. WHOLESALE MARKETS

The young proprietor of a grocery, provision, or oil business will not hold his position for long before discovering that it has its responsibilities, and that even a Proprietor has his duties to perform, and must regularly and systematically attend to them.

The **Study of the Markets** is one of the most important of those duties, and perhaps one of the best modes of preparing one's self for doing so intelligently is to visit the markets themselves and learn something of them at first hand, in order that the weekly reports published by the trade papers may be properly understood. We refer, of course, to the wholesale markets carried

on in the large ports and towns. Wherever he is situated, the retailer should make a point of visiting, at any rate occasionally, the wholesale Exchange or market of his district; and although it is not every district which has a grand Exchange like those of Manchester or Liverpool, or the new "Baltic" in London, he will always find his visit a means of gaining useful information.

For the tyro it may be necessary to explain that when goods are imported into this country from abroad the first question which arises in regard to them is whether they are subject to duty or are duty free. If the goods are Importation. subject to Customs duty—such as are chicory, coffee, cocoa, dried fruits, spirits, tea, tobacco, wine, &c.—a merchant has the option of either paying duty on his goods at the time of landing, or of warehousing them until required for home use or exportation. Naturally, therefore, he puts off paying the duty until he actually requires the goods for use or delivery to somebody who has bought them from him; and as a consequence nearly all dutiable goods are lodged in a bonded warehouse. Practically all the tea brought into the kingdom is landed in London, and this may serve as an illustration. The tea ships discharge, in one of the large docks, into lighters or railway trucks, by means of which the packages of tea are conveyed either to wharf warehouses or depots, or by locked cart from the wharf to the up-town warehouses for which the importer has entered them. When brought into the warehouse the tea is weighed at the scales gross; after which the packages, or some of them, are turned out and the "tare" or weight of the empty package ascertained. In some of the bonded warehouses tea is allowed to be repacked for exportation, and in this case there is no payment of duty; but if the tea is required for consumption in this country it has to be "cleared" by paying the duty before it can be taken out of the warehouse. Dried fruit is often cleared from the ship's side by payment of duty, and immediately delivered to vans. The same process goes on in all the ports of the kingdom, and although nowadays many retailers import their supplies direct, there is nevertheless an enormous amount of warehousing, both of dutiable and free goods. For example, one wholesale house alone holds stocks of sugar in forty or fifty different parts of the country. From such warehouses, bonded or free, the retailer's

orders are executed by the wholesaler. But doubtless even our tyro is aware that it is also a common practice to buy and sell goods before they are in the country at all, and not a few of the disputes that arise in trade are owing to the inability of the wholesaler to deliver the goods at the time specified by the contract.

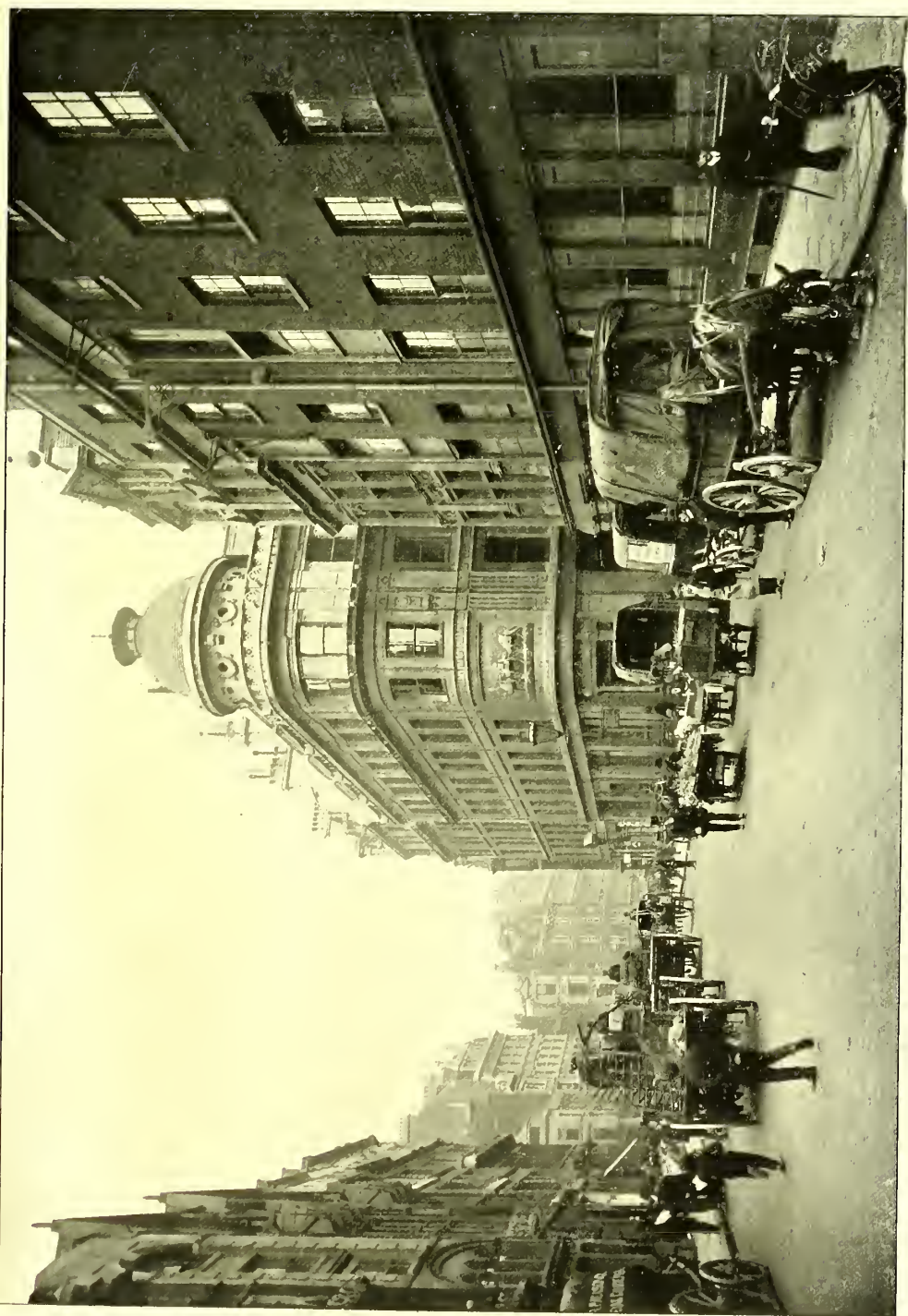
The trade visitor to London will find the wholesale grocery trade centred mainly in **Mincing Lane** and Eastcheap. At the **London Sales.** Commercial Sale Rooms in Mincing Lane are held—in rooms small or large as needed—the public sales of sugar, coffee, cocoa, tea, spices, &c., as well as of drysalteries, hides, and other items of less absorbing interest to the grocer. Outside the rooms, in “the Lane” itself, are usually congregated various “bulls” and “bears” and “bucket-shop” operators of divers nationalities—British, Germans, Austrians, French, Polish Jews, Spaniards, and Spanish Americans,—many hatless, unmindful of rain or shine, most of them smoking, and all eager to do business. One who has frequented the sales for many years writes:

“The sugar sales are conducted in a very sober manner. Not so those of coffee, where chaff is freely bandied about without respect of persons, though with less boisterousness than in former times. Cocoa is sold in leisurely fashion, and the tedium at times is somewhat monotonous. The spice sales have declined in importance within recent years, and have altered in character, so much now being done for arrival instead of on the spot. The tea sales present lively and grotesque aspects. The tone of the room has declined since many of the old faces have disappeared and a new generation has succeeded them. Owing to the peculiar conditions and customs that have crept in of recent years the auctioneer no longer commands the respect he formerly held. Bids are made in the most excitable manner, especially for common grades, which are valued to the fraction, and friction is frequently observable at the decisions given. But in the general excitement and confusion the progress of selling is really remarkable. There is no lack of humour, personal allusions being common.”

Of the **Provision Trade** London Bridge is now the chief wholesale centre so far as London is concerned. Hibernia Chambers, the head-quarters of the Home and Foreign Produce Exchange,

"GROCERS' CORNER", EASTCHEAP

Eastcheap, a part of the ancient "Chepe" which ran from near the Tower of London in the direction of the village of Charing, and another part of which is commemorated in Cheapside, is the busy thoroughfare between the Great Tower Street of to-day and the open space which marks the junction of King William Street, Cannon Street, Gracechurch Street, and the approach to London Bridge. From Eastcheap run a number of the "lanes" so familiar in London's history and in the present-day vernacular of London's commerce—Pudding Lane, Botolph Lane, Idol Lane, &c., on the side next the river Thames; and on the opposite side, Philpot Lane, Rood Lane, and, best known of all, Mincing Lane. The number of important wholesale houses, private and public sale-rooms, and other adjuncts of the grocery trade in and around it, render Eastcheap the greatest grocery centre in the world.



London Stereoscopic Co.

"GROCERS' CORNER", EASTCHEAP, LONDON

Limited, is the recognized central meeting-place of the wholesale trade, and in the neighbourhood of the adjacent Tooley Street—famous no longer for its tailors—most of the im-
 porters and agents of provisions are located. Smith-
 field is the centre for the big wholesale houses, where agents and importers arrange important transactions with the wholesalers. Few of the country dealers and grocers miss a visit to Smithfield whilst in the metropolis. The import trade was formerly much split up, but within recent years has become firmly established in Tooley Street. The egg-trade fraternity meets every Monday at the Hop Exchange, Borough, to regulate prices and also arrange the sale of goods. Most or all of the trade attend, and the scene while the market lasts is commonly animated. Brewers' Quay, which is the centre of the Dutch butter and cheese trade, has been steadily losing in importance for some years past, many of the firms once established there having migrated across the water to Tooley Street or its vicinity. The distribution of Colonial butter, which is now of considerable importance, is well divided amongst the importers and agents. Danish, in spite of the regulation of prices from Copenhagen, has a remarkable sale throughout the country, both it and Irish being largely imported direct by retailers. The public sales of green fruit take place daily, except Thursday (usually) and Saturday, at the Monument Sale-room. For "hard" green fruit Pudding Lane is the centre. It may be well to note, perhaps, that although the public wholesale auctions are open to everyone who can comply with the conditions of sale, the lot of the stranger present on such occasions is not always an enjoyable one, even if he be at no real disadvantage. If the novice desires to buy in very large quantities he should employ a broker. For small purchases the retailer can as a rule do better with the large wholesale houses, from whom goods can always be obtained at a very small increase upon the quoted sale prices.

Whilst following regularly in his trade paper the course of the markets, and the hints given in various ways as to the probable course of prices, our Proprietor has also to note
 carefully the times and seasons for goods which interest
 his patrons. He will observe, for example, that the new season
 for China teas opens about the first week in May. The Govern-

Provision
Exchange.

Seasons.

ment coffee auctions at Padang, the centre of the coffee districts of Sumatra (where the finest "Java" coffees are grown), are held four times a year, at the end of March, June, September, and December. The new-crop shipments of Demerara sugar (under which term is included all cane sugar coming from the British West Indies, Guiana, and Honduras, and also, commercially speaking, the crystallized *cane* sugars from Trinidad, Jamaica, St. Kitts, Barbados, and St. Lucia) arrive in this country usually in November. Barbados arrives about the beginning of April. By the beginning of December the "big season" in dried fruits has almost ended in the wholesale market, the bulk of the new crops having passed into the hands of the retail trade. The Christmas season, which then commences, is the largest of the year for green fruits. The following are a few further dates of actual arrivals:—January 20, East Indian coffee; February 10, tinned salmon; March 13, Trinidad sugar; March 21, Naples lemons; May 6, tinned lobsters; May 31, Valencia tomatoes; June 13, new sardines; June 16, Port onions; July 11, new melons; July 17, new Monings and Kaisows; July 25, Denia grapes; August 8, Almeria grapes; August 25, new Valencia raisins; August 29, new sultanas; August 31, new currants; September 5, new Turkey figs; September 11, new Spanish figs; November 19, Demerara sugar; November 20, Costa Rica coffee; December 21, Guatemala coffee. It used to be supposed that the grocer's orange season ended at Whitsuntide, but shipments from Valencia, Murcia, and Naples often arrive at the end of June, and the market may be well supplied up to the end of July. The fact is, the production of all foodstuffs is liable to such various and frequently severe changes that the best course for the ordinary grocer is to deal with changes in prices as they occur. But records which one makes for one's self usually tell a tale of their own, and records of the fluctuation of prices—kept, say, in a Desk Diary—are frequently of use, if only as warnings of what to avoid. Below we give an example of a **Prices Chart**, upon which a graphic record of any article may be kept by noting the prices each week as published and drawing a line through the square for the week opposite that price. By using different coloured inks—one colour for one article—the prices of several different articles may be thus recorded on

the same chart. In the diagram a few months only are given, but the principle is the same for the full year.

Name of Article.	Price.	JANUARY.				FEBRUARY.				MARCH.					APRIL.				MAY.				JUNE.				
		5	12	19	26	2	9	16	23	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29
	80/																										
	78/																										
	76/																										
	74																										
	73.																										
	72																										
	71/																										
	70																										
	69.																										
	68																										
	67/																										
	66/																										
	65.																										
	64/																										
	63.																										
	62/																										
	61/																										

17. THE PROPRIETOR

Amongst the remaining matters which are of especial concern for the proprietor of a business, the question of what gross profit he shall fix is of primary importance. In answering it he will naturally be guided by his own circumstances and those of his particular business, but we hope he will allow us to implore him *not* to adopt the too common practice of what the late "Barney" Barnato used to describe as "making up on the swings what we drop on the roundabouts"—throwing away profit on many goods and trying to make it up on the few. All the grocers' associations which have discussed this policy have condemned it and have supported instead the obviously safer as well as more honest and straightforward plan of taking a "living profit" on all goods sold. In the opinion of most of them such a living profit, to cover all trade expenses, interest on capital, and a living wage for the trader himself, can in no case be less than 15 per cent calculated on returns. A Scottish grocer gives the following as the experience of sixteen grocers, most of whom have been in business for twenty years, and whose weekly takings range from £50 to £300:—

Fixing
Profit.

Wages	...	...	...	...	...	3½ per cent.
Rates, taxes, licenses, and insurances	...				1	„
Lighting, heating, and general repairs	...				¾	„
Paper, twine, pins, &c.	...				1	„
Incidental expenses and depreciation	...				1	„
Delivery of goods, hiring, &c.	...				1	„
Total						8¼

If a grocer's customers are content to pay cash and take the goods with them, business in a brisk market may be found profitable at 12½ per cent; whereas if the grocer has to send out for orders, deliver by horse cart, give credit, and render periodical accounts, 20 per cent will not be too much, horse and cart work alone representing in actual experience a difference of 5 per cent. In some cases wages will stand for more than the 3½ per cent quoted above. Rent will vary, of course, and this item, which is not included in the table, may be 1¼ per cent more. To cover such contingencies as bad debts, breakages, and spoilt stock, reckon an extra 1 per cent. Altogether, working expenses will not as a rule be found much within 10 per cent. When interest on capital is added, and 6 per cent as a reasonable net profit, it is found that from 15 to 17½ per cent gross profit is needed. No goods whatever should be sold at less than 12½ per cent gross profit, whilst goods subject to special depreciation should show considerably more.

These percentages, it is commonly agreed in the trade, should be calculated on **returns**. An article costing 8*d.* and sold at 10*d.* shows a profit of 25 per cent on cost, but only 20 per cent on returns.

1. To find the percentage of profit on cost—

Say the cost is 8 and the profit 4.

$$4 \times 100 = 400 \div 8 = 50 \text{ per cent.}$$

2. To find the percentage of profit on sales—

Taking the same figures for cost and profit.

$$4 \times 100 = 400 \div 12 (4 + 8) = 33 \text{ per cent.}$$

3. To find what amount to add to cost to realize a certain rate per cent upon the cost—

Say the cost is 6 and the rate required 25 per cent.

$$6 \times 25 = 150 \div 100 = 1.5,$$

which may be £1, 10*s.*, 1*s.* 6*d.*, or 1½*d.*

4. To find what amount to add to cost to produce a certain rate per cent upon sales—

Say the cost is 6 and the rate required 25.

$$6 \times 25 = 150 \div 75 (100 - 25) = 2.$$

But it is not every trader who is an arithmetician. An easy way of calculating profits is by adopting the following rules:—

Add to cost $\frac{1}{2}$ the cost price to give $33\frac{1}{3}$ per cent on the returns.

"	$\frac{1}{3}$	"	"	25	"	"
"	$\frac{1}{4}$	"	"	20	"	"
"	$\frac{1}{5}$	"	"	$16\frac{2}{5}$	"	"
"	$\frac{1}{6}$	"	"	$14\frac{2}{7}$	"	"
"	$\frac{1}{7}$	"	"	$12\frac{1}{2}$	"	"
"	$\frac{1}{8}$	"	"	$11\frac{1}{9}$	"	"
"	$\frac{1}{9}$	"	"	10	"	"
"	$\frac{1}{10}$	"	"	$9\frac{1}{11}$	"	"
"	$\frac{1}{11}$	"	"	$8\frac{1}{3}$	"	"
"	$\frac{1}{12}$	"	"	$7\frac{9}{13}$	"	"

Below are examples of these calculations, the figures along the top line showing the percentage of profit on returns in each case:—

COST.		5%	7½%	10%	12½%	15%	17½%	20%	
s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
0	1	0	1 ¹ / ₁₆	0	1 ³ / ₃₂	0	1 ³ / ₃₂	0	1 ¹ / ₄
0	2	0	2 ³ / ₃₂	0	2 ³ / ₁₆	0	2 ³ / ₈	0	2 ¹ / ₂
0	3	0	3 ⁵ / ₃₂	0	3 ¹ / ₄	0	3 ¹⁷ / ₃₂	0	3 ³ / ₄
0	4	0	4 ⁷ / ₃₂	0	4 ¹¹ / ₃₂	0	4 ⁹ / ₁₆	0	5
0	5	0	5 ⁹ / ₃₂	0	5 ¹³ / ₃₂	0	5 ²³ / ₃₂	0	6 ¹ / ₄
0	6	0	6 ⁵ / ₁₆	0	6 ¹⁵ / ₃₂	0	6 ⁷ / ₈	0	7 ¹ / ₂
0	7	0	7 ¹¹ / ₃₂	0	7 ¹ / ₁₆	0	8 ⁷ / ₃₂	0	8 ³ / ₄
0	8	0	8 ⁷ / ₁₆	0	8 ¹¹ / ₁₆	0	9 ¹ / ₈	0	10
0	9	0	9 ¹ / ₂	0	9 ³ / ₄	0	10 ⁵ / ₁₆	0	11 ¹ / ₄
0	10	0	10 ⁹ / ₁₆	0	10 ¹³ / ₁₆	0	11 ⁷ / ₁₆	1	0 ¹ / ₂
0	11	0	11 ⁹ / ₁₆	0	11 ⁵ / ₁₆	1	0 ⁹ / ₁₆	1	1 ³ / ₄
1	0	1	0 ⁵ / ₈	1	0 ¹⁵ / ₁₆	1	1 ³ / ₄	1	3

The calculations are greatly facilitated by using a *Buyer's Calculator*, which can be bought for 6d. As a rough working rule for a small business, reckon that anything which costs 5d. should not be sold under 6d.; if (as in provisions frequently) 1d. profit in 6d. cannot be made, make up by selling at 6d. some lines which cost $4\frac{1}{2}$ d. "When you become a master," writes an experienced friend to an assistant, "keep a stock book, *i.e.* a book which will show at a glance, under an index, your purchases of all goods, giving from whom, invoice price, charges, discounts,

and net costs; and see that you get your profits sufficiently over this cost to pay your expenses, with whatever margin you expect for yourself—which must not be too much in these days of competition.”

A grocer in a rather large way of trade will find it pay to departmentalize his business methodically, and one who does so informs us that his average gross profit on the grocery side is 19 per cent with goods turned over on the average seven times a year, whilst on the provision side it is 14 per cent with goods turned over nine times a year. The following details may be interesting:—

(1) *Tea* pays 16 per cent. Stock turned over eight times annually. (No proprietary tea.)

(2) *Coffee and Cocoa* together (the cocoas are chiefly proprietary), 21 per cent. Stock turned over twice to three times.

(3) *Sugar*, 22 per cent. Stock turned over ten to twelve times. Sugar with us is very much more profitable than tea; we sell much more at $2\frac{1}{2}d.$ per lb. than at $2d.$

(4) *Biscuits*, 11 per cent. Stock turned over seven times. “According to the prices we sell at, we ought to get 15 per cent to 17 per cent. If I did not know better I should believe I was getting that.”

(5) *Jam*, 25 per cent. Stock turned over twice only.

(6) *Fruit*, dried and in tins, 15 per cent. Stock turned over about three times. “We do a large trade in tinned fruits, of which we find it necessary to hold large stocks.”

(7) *Green Fruit*, 14 per cent. Stock turned over about twenty times. “Green fruit is a very small department with us. I have never made such a high percentage before. It usually runs at 10 per cent to 12 per cent in the winter six months, and only 4 per cent in the summer six months. Yet we sell at prices showing from 20 per cent to 25 per cent. Practically, green fruit is not a very profitable trade because of the great waste, particularly in the summer. Few grocers realize this.”

(8) *Soap and Candles*, 21 per cent. Stock turned over three to four times.

(9) *Grocery Sundries* (i.e. all small articles, not included in above departments, which are eatable), 30 per cent. Stock turned over about twice.

(10) *Household Sundries* (all small articles not eatable), the same as No. 9.

(11) *Bacon*, 11 per cent, and stock turned over every fortnight (i.e. we hold a fortnight's stock), say, twenty-six times in the year. This is an unusually good percentage. It has been as low as 7 per cent, and is usually 9 per cent. Although our working expenses are 10 per cent on our whole turnover, I am of opinion that bacon pays at 9 per cent. We turn over our stock as a whole eight times in the year. Bacon is turned over twenty-six times, nearly four times as often. Then working expenses are only about 3 per cent to $3\frac{1}{2}$ per cent on the turnover of bacon. So that a profit of 9 per cent on the turnover pays very well.

(12) *Hams*, 13 per cent. Stock turned over five or six times only. Not so profitable as bacon at 9 per cent.

(13) *Cheese*, 7 per cent only. Stock turned over about eight or ten times.

This is very bad. Cheese is usually about 10 per cent, and occasionally as much as 15 per cent.

(14) *Salt Butter*, 10 per cent. Stock turned over twelve times. This is not quite so good as usual.

(15) *Fresh Butter*, 8 per cent. Stock turned over every week. This is not so good as usual. We get 2d. a lb. on fresh butter, which ought to show 13 per cent.

(16) *Provision Sundries*, 17 per cent, and stock turned over nearly twenty times. It is usually 20 per cent.

(17) *Tinned Meat and Fish*, 26 per cent. Stock turned over barely twice in the year. No better in practice than fresh butter at 8 per cent.

(18) *Sauce and Pickles* (including vinegar), 28 per cent. Stock turned over twice.

(19) *Wine and Spirits*, 20 per cent. Stock turned over nearly three times.

(20) *Paper*. An "expense" allowed for in calculating above percentages.

Average of grocery and provision sides together 16 per cent, and stock, as a whole, turned over eight times in a year.

The grocer who supplies the above particulars uses cash checks. Every article that goes out of the shop for ready money is entered on one of these checks; the check is then torn off and given, with the money, by the customer to the cashier. The cash checks are entered next day in the "cashier's check book". Credit sales and cash sales have their separate books; and a stock book or bought book is also kept. The "cashier's check book" has a number of money columns; each salesman has a column to himself for each day's ready-money takings, as shown by his numbered check slips (all the checks being in running numbers, as he has his own check book). In the day book all credit sales are entered and priced out daily. For cash taken for bills a separate column is reserved in the cashier's check book. By this method a complete account is kept of every article that comes into the shop or goes out of it, and an analysing clerk works out the figures for each of the following:—

GROCERY SIDE

1. Tea.
2. Coffee and Cocoas.
3. Sugar and Sweets.
4. Biscuits.
5. Jam.
6. Fruit, dried and tinned.
7. Green Fruit.
8. Soap and Candles.
9. Grocery Sundries (eatable).
10. Household Sundries (not eatable).

PROVISION SIDE

1. Bacon.
2. Hams.
3. Cheese.
4. Salt Butter.
5. Fresh Butter.
6. Provision Sundries.
7. Tinned Meat and Fish.
8. Sauce and Pickles (vinegar).
9. Wine and Spirits.
10. Paper and String.

The “departments” are in the book only, and do not affect the arrangement of the shop. In the stock book an account is kept not only of all stock that comes in but also of some departments as the goods go out of warehouse to counter. By a “counter buyings day book” a debtor and creditor account is kept as between warehouse and counter. The net result of the system is that the grocer is able to obtain at any time a stock-taking balance sheet such as the following (we take five departments only as sufficiently illustrative):—

	Bacon.	Hams.	Cheese.	Salt Butter.	Fresh Butter.	Totals.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Stock in Shop, Sept. 26, '03..	6 11 7	11 14 7	9 10 7	0 12 9	1 14 2	30 3 8
Bought in Six Months.....	666 6 8	114 7 5	455 15 7	263 10 8	305 5 11	1805 6 3
	672 18 3	126 2 0	465 6 2	264 3 5	307 0 1	1835 9 11
Less Stock, Mar. 27, '04.	18 15 9	13 1 3	18 16 2	4 2 5	1 9 3	56 4 10
Cost of Goods sold in Six Months.....	654 2 6	113 0 9	446 10 0	260 1 0	305 10 10	1779 5 1
Sales in Six Months.....	776 19 8	131 19 11	488 7 5	294 14 5	337 14 6	2029 15 11
Cost.....	654 2 6	113 0 9	446 10 0	260 1 0	305 10 10	1779 5 1
Gross Profit.....	122 17 2	18 19 2	41 17 5	34 13 5	32 3 8	250 10 10
Profit on Sell- ing Price	15 ⁴ / ₈ %	14 ² / ₅ %	8 ³ / ₈ %	11 ³ / ₄ %	9 ¹ / ₂ %	12 ³ / ₁₀ %

The “stock” dealt with above is in the shop only. By calculating the percentages as shown, and comparing them with those of previous dates, a valuable check is kept on the business.

A less elaborate plan, which will suffice for some businesses, is to keep an account in this form—

Dr.		WEEKLY SUMMARY OF TRADING		Cr.	
	£ s. d.		£ s. d.		£ s. d.
Cash Purchases.....	5 0 0	Cash Sales.....	25 0 0		
Credit Purchases.....	46 0 0	Credit Sales.....	35 0 0		
Expenses.....	4 10 0				
	55 10 0				60 0 0

It may be useful to give also a specimen of a grocer's **expenses book**—although it is possible to buy these arranged very completely for use in fairly large businesses. In the following book

each column is added up at the end of the month, and the total carried forward till the end of the year. The items are posted up from the cash book every week—

Date.	Particulars.	Wages.	Rent and Rates.	Stationery, Postage, &c.	Advertising.	Horse Keep.	Repairs and Renewals.	Carriage.	Sundries.	Total.

A printed **order card** may be in the following form:—

<p><i>From</i> TOM BROWN & CO., LTD.</p> <p><i>Telegrams</i>—"BROWN", RUGBY.] [<i>Telephone</i>, 5260.</p> <p><i>Registered Office</i>—35 HIGH STREET, RUGBY</p> <hr style="border: 0.5px solid black; margin: 10px 0;"/> <p style="font-size: small; padding-top: 20px;">This order is given on condition that goods are guaranteed pure within the meaning of the Food and Drugs Act (1875), and all Acts amending same.</p>	
--	--

18. PRICE LISTS AND ADVERTISING

Besides his special and personal accounts, the **Compilation of the Price List** will naturally engage the care of the principal in a business. The price list should be issued at least once a year; its cost may in some cases almost be covered by inserting advertisements of manufacturers or local tradesmen. In compiling it, aim first of all to make it clear; secondly, to make it interesting; but do not overcrowd so as to make it confusing. Useful hints on the cooking and preparation of articles tend to the customers' keeping the list carefully and referring to it frequently, which is, of course, just what the grocer desires. In some instances postal information is given, or an omnibus time-table, a bunch of good recipes, interesting local items, hints on preserving fruit, cookery

for invalids, famous wine vintages, how to treat wines, and so on. The Home and Colonial Stores, which has a great number of branches (now over 500), issues a neat little memorandum book with a calendar, postal and general information, and a short selected list of prices of groceries and provisions. One list before us quotes the following from a garrulous circular by Thomas Garway, or Garraway, who had a shop in Exchange Alley, near the Royal Exchange in London, in 1660, and who thus describes the virtues of tea:—

The drink is declared to be most wholesome, preserving in perfect health until extreme old age. The particular virtues are these: It maketh the body active and lusty. It helpeth the headache, giddiness, and heaviness thereof. It removeth the obstructions of the spleen. It is very good against the stone and gravel, cleaning the kidneys and ureters, being drank with virgin's honey instead of sugar. It taketh away the difficulty of breathing, opening obstructions. It is good against tipitude, distillations, and cleareth the sight. It removeth lassitude, and cleanseth and purifieth acrid humours, and a hot liver. It is good against crudities, strengthening the weakness of the ventricle, or stomach, causing good appetite and digestion, and particularly for men of corpulent body, and such as are great eaters of flesh. It vanquisheth heavy dreams, easeth the frame, and strengtheneth the memory. It overcometh superfluous sleep, and prevents sleepiness in general; a draught of the infusion being taken, so that without trouble whole nights may be spent in study, without hurt to the body, in that it moderately healeth and bindeth the mouth of the stomach. It prevents and cures agues, surfeits, and fevers, by infusing a fit quantity of the leaf, thereby provoking a most gentle vomit and breathing of the pores, and hath been given with wonderful success. It (being prepared and drank with milk and water) strengtheneth the inward parts, and prevents consumption.

In a list issued by a grocer wine-merchant, we find a hint or two on wines, thus:—

Many a good bottle of wine is spoiled by careless treatment, and the blame is too often laid upon the wine merchant. I venture, therefore, to make the following suggestions:—

For wine to be in perfect condition the bottles should be laid on their sides in a cellar of even temperature.

In decanting old bottled Port, Sherry, or Madeira, care should be taken that the wine is not poured off too close, as any sediment or crust entering the decanter spoils the flavour as well as the appearance of the wine. Old bottled Port should be stood upright a few hours before decanting. Sparkling wines should be kept in the coolest part of the cellar, and laid down.

The list should specify, as a matter of course, the firm's rules and terms, hours of business, arrangements as to delivering goods, and so on. In hand-bills and circulars, or "trade stirrers", the element of humour often appears, *e.g.*:—

In Loving Memory of

LONGWIND TICK CREDIT,

Who, in the Battle of KEEN COMPETITION,

Was smitten hip and thigh by the mighty forces of Ready Money,
And was interred amidst the joyful tears of his once deluded followers.

His end was peace (to the grocer).

His late followers trade with J. C. Boulby, cash grocer, 158 Albert Road,
Heeley.

Death Certificate.—This is to certify that Longwind Tick Credit died on the 30th day of February, 3091 (age unknown, birth certificate lost), shot by a cash bullet from an up-to-date maxim operated by J. C. Boulby, cash grocer, 158 Albert Road, Heeley.—(Signed) COMMONCENCE, Registrar.

A well-known Portsmouth firm issues, a little before every Christmas, a review of the year's history, calling attention to **seasonable lines**, including the Christmas Pudding, for which the following recipe is recommended:—

Ingredients.—2 lbs. raisins, with stones removed; 2 lbs. currants; 2 lbs. sultanas; 1 lb. mixed peel, cut small; 2 lbs. beef suet, chopped fine; 1 lb. fine bread crumbs; 1 lb. flour; ½ lb. chopped almonds; 2 lbs. best Demerara sugar; ½ pint brandy; ½ doz. eggs; 1 pint milk; the grated peel of 1 lemon. Place the dry ingredients in a large pan, mix thoroughly, then add the eggs (which must be well beaten), milk, and brandy. Stir well until of an even consistency, if necessary adding a little more milk. Place in basins which have been greased with best butter; cover the top with a piece of stiff dough, made of flour and water, and tie down with a cloth. *Boil for ten hours.* After boiling, the puddings will keep in perfect condition for several months, and when required for use must be heated by boiling from 50 to 60 minutes. After heating, the cloth and dough are removed, and the pudding turned out of the basin.

It is the practice of a Philadelphia firm to issue a weekly four-page sheet “for up-to-date housewives”. Each week about thirty special “lines” are described, crisply criticized, and in-
formingly illustrated. A week's menus for breakfast, lunch, and dinner are given by a lady authority, while another lady chats on food, the table, &c., in a column of gossip, and answers customers' enquiries. Not every grocer can afford to emulate this, but most can manage a special **summer list**, with hints for picnics, and so on; or a **Christmas list**, with particulars of glacé fruits, crackers or “cosaques”, fancy confectionery, wines, cigars, novelties for the juveniles, pretty boxes for filling with gifts, Santa Claus stockings, Christmas-trees and decorations, Oriental curios, cakes, puddings, dried fruit and dessert

Special
Lists.

fruit, and such "good cheer" as turkeys, boar's head, and special Christmas hampers for presents. A well-designed and striking cover, printed in gilt or silver or bright showy colour on prettily-tinted paper, and tied perhaps with a natty little silken ribbon, will always please the housewife and the young folk, and may get talked about at table. A little money and a great deal of taste expended on a season-list that is attractive outside and business-like inside will seldom fail to prove a good investment.

Another idea "with money in it" is the **Christmas Club**. Have coloured posters, or gummed labels on coloured paper, thus:—



With regard to **posters**, for an ordinary window one large poster and perhaps two small ones are usually sufficient; and whatever posters are used should be chosen with care. The subject-matter should be as striking as possible; good ink and paper should be used, and let there be no *paltry* decoration.

The retailer's **stationery** should also receive attention.

Stationery. Letter-paper should bear name, business, and address; envelopes also should have these, if only in the impress of a rubber-stamp. Bill-heads should be neat and of "good" appearance, and have nothing unnecessary in the heading to obscure the one address which the shopkeeper wishes his customers to bear in mind. If invoices are used they should not exceed in size 11 inches by 9 inches, and the heading should be merely the name, and postal and telegraphic address, unless there is some special reason for calling attention to the terms of business. All bags and tea-prints should be well printed and creditable.

For general **advertising** the local newspaper will probably be

found the most suitable medium. For calling attention to new "lines", a neatly type-written circular, manifolded on one of the handy machines now obtainable, should be sent to selected houses; and it will be the more likely to receive attention if enveloped and addressed, whilst an addressed envelope and order-form may also be enclosed. But a well-worded advertisement in the local journal serves its purpose apart from this. Says a New York paper:

"Mary had a little lamb"—
 You do not look surprised?
 Of course you don't, for Mary has
 Been widely advertised!

There is a suggestion there as to the effect of publicity and the value of advertising, and a further hint in this:

The man who advertises with a short and sudden jerk
 Is the man who blames the printer because it didn't work.
 The man who gets the business uses brainy printers' ink;
 Not a cutter and a splutter, but an ad. that makes you think.
 He who plans his advertising as he plans his well-bought stock
 Has the future of his business just as solid as a rock.

Undoubtedly there is much art in advertising, and much skill in knowing how to advertise effectually. As the British Consul at Chicago says: "Business men are learning that advertising must be done with understanding to draw attention, and changed frequently to keep it". An advertisement should be novel enough to be striking, and pithy enough to leave an impression—a good impression—on the mind that is struck. Don't spare time or pains, therefore, in drafting your advertisement; and don't trust too much to the printer. By *drawing* your advertisement, and underlining important words once, twice, thrice, or more, try to give him some ideas; and be careful to see and consider critically his "proof" before his rendering of your ideas goes before the public, whose verdict may have so much effect upon your business.

19. GROCERS' ASSOCIATIONS

Whatever else he may do for his own protection, the modern educated grocer will hardly omit the common-sense step of joining his fellow-grocers in their trade combination, the need of which, for "Defence, not Defiance", is being more and more emphasized. We refer here more especially to the associations of retailers. Associations are just as necessary for the wholesale section of the grocery and provision trade, but with that section we are not here specially concerned. Sometimes it is convenient for wholesalers and retailers to form a single association, and it is undoubtedly an advantage that the two sections should be in touch with each other, since disputes, rearrangements of terms, and such matters as the regulation of prices can be so much the better dealt with. Nevertheless it is the opinion of experienced and trustworthy guides that, from the retailer's point of view, the ideal association is one to which the wholesale dealers are admitted simply as honorary members.

On the subject of the **value of associations** to the retail grocer, we cannot do better than quote the remarks which follow, from a gentleman who in himself represents what all our readers doubtless hope to become, a thoroughly successful trader.

"Some years ago the writer, then a small trader with two shops, having joined the local association, chanced to meet one of his competitors whom he had always regarded as his severest opponent in trade. It happened to be market day, the butter market was excited, and prices were some shillings higher than the week previous. After bidding each other 'good morning', and saying a few words on association matters (we had both been just elected on the committee of the association), a chance allusion was made to the awkward butter market, and before parting it had been decided that both should put up the price 1*d.* per lb. Unquestionably this would not have been done under old conditions, but the result of our conversation was, in one week's additional profit, sufficient to pay some five years' subscriptions, and there has been a good understanding between us ever since. This incident is simply mentioned to show that even good fellowship 'pays'. After the experience of years, a much better system of running associations prevails than at the period

An "Old Hand"
on Associations.

when this incident occurred; and it is now much more common than in the past to have a tacit understanding as to prices. The associations were mainly formed to defend traders against the action of the authorities, rather than to assist them in making it easier for the conscientious trader to carry on his business by weeding out the black sheep of the trade. Most of the authorities, from medical officers of health to members of the government, now recognize that while the member of an association is sure of assistance if his fellow-members think he is being persecuted or unjustly prosecuted, yet upon the whole the associations are desirous of assisting rather than thwarting efforts to secure to the public wholesome food and just weights and measures. From a double point of view in this connection it would appear worth the while of any young tradesman to be identified with an association, for it appears probable that, in course of time, to be a member of a live association will be a certificate of merit in the eyes of the local authorities and the general public. It is hoped by many that, in a modified form, there may some day be a revival of the old principle of trade associations such as obtained in the Ancient Guild of Pepperers, otherwise grocers, when the officers of the guild were also the inspectors, and looked after the purity of the articles sold by the members of the trade. But to return to the practical benefits derived from a grocers' association. Firstly, it is usual for associations to retain the services of a solicitor. This need not cost very much, as the business accruing from such an association in itself makes it worth while for a good solicitor to undertake the post. By coming in contact from day to day with the various members of the organization, he becomes an expert in trade matters, and naturally the members, and even traders outside the association, are inspired with more confidence in a solicitor well acquainted with trade details than in one who knows nothing of the trade—except what he learns from casual business. In return for the small retaining fee paid to the solicitor, the association, and every member usually, has the privilege of obtaining **legal advice** in the first instance free of charge, and it is no exaggeration on the writer's part to say that during the past ten years he has known scores of members who have been repaid their subscription many times over by the advice thus received.

Arranging
Prices.

Advantages
Obtainable.

So many questions crop up nowadays, for example, in regard to compensation for accidents, that the smallest trader in the kingdom is liable to be utterly ruined if he does not post himself up in regard to his obligations, and provide accordingly; and in this connection alone it is a great convenience to have a solicitor who is at the same time one's friend and colleague. Then there is **insurance** in various forms, which most associations now take up with great benefit to their members, as much lower terms are given with a collective policy. But when all has been said of the advantage of associations in regard to these matters, nothing will appeal more to the individual trader than the immediate profit he can obtain from the mutual arrangement of prices and the agreement to cease selling at practically cost price."

Did space permit, it would be easy to supplement our friend's remarks on the benefits derivable from associations, but perhaps enough has been said, for to any man of common sense the value of combination is self-evident.

Let our grocers be determined to work hard, to master their business and honour it, to treat their employees as they would like to have been treated themselves, and to meet their fellows in trade as honourable traders desirous of helping one another for the good of all, and they need have no fear either for their trade or themselves.

And so, in the words of the time-honoured grace of the Grocer Company: "*God Preserve the Church, the King, and the Worshipful Company of Grocers!*"

INDEX

A

Abbreviations of phrases, i, 161-163.
Aberdeen Pork—pickling, iii, 193.
Abernethy Biscuits, ii, 232.
Absinthe, iv, 164, 165.
Abyssinian Coffee, ii, 59, 68.
Accident Compensation to assistants, &c., i, 112; iv, 244, 245.
Accommodation Bills, i, 254.
Accounts—
 Branch shop, i, 256, 258-265.
 Payment of stock accounts to travellers—authorization, &c., i, 156.
 Provision department, i, 176.
 Railway accounts, iv, 252-254.
 Receipts, stamping, &c., i, 254, 255.
 Terms on bills—statement of, i, 102.
 [See also titles Bank Transactions, Book-keeping.]
Acetylene illumination, i, 89, 91-93.
Acts concerning retail grocer and his responsibilities, iv, 224.
Adulteration and Safeguards—
 Company shop rules, i, 268.
 Early and modern forms, iv, 221, 222.
 Food laws (see that title).
 Goods with and without guarantees, iii, 257, 258, 262, 263. [256.]
 Law holds retailers responsible, iii.
 Precautions in selling provisions and groceries, iii, 258-260, 263, 264.
 Protection of retailer by warranties, i, 159, 160; iii, 256, 257, 262, 263.
 Provisions misdescribed on customers' bills, iii, 260. [259.]
 Registry of sales by wholesaler, iii.
 Tinned goods and perishables, iii, 260-262.
Advertisements, Circulars, &c.—
 Branch shop weekly circular, i, 261.
 Disposal of business, i, 50. [265.]
 General appearance of shop, i, 89, 90, 197, 219.
 Newspaper advertisement, iv, 269.
 Opening day, i, 103, 105, 106, 107.
 Posters, circulars, stationery, and invoices, iv, 267, 268.
 Staff and situations, i, 119.
 [See also Price-lists.]
Aerated Bread, ii, 226.
Aerated Water—license for sale and regulations for bottling, iv, 17; preparation of, iv, 185-187.
African Coffees, ii, 16, 66, 68.
African Cubebs, ii, 170.
African Fish Oil, iv, 46.

African Wines, iv, 159.
Agency System for wines and spirits, iv, 172, 175, 177.
Ailments—sale of remedies for, restrictions, &c., iv, 198, 201.
Albuminoids—cereals analysis, ii, 108; tea albuminoids, ii, 39, 40.
Alcohol—description and production, iv, 146, 159.
Alcoholic and non-alcoholic liquors—classification, &c., iv, 145, 147, 159.
Ales—varieties, bottling, &c., iv, 180, 183.
Allspice, ii, 167. [183.]
Almond Drop Biscuits, ii, 232.
Almond Icing, ii, 239. [76.]
Almond Oils, ii, 122, 123, 240; iv, 43.
Almond Soaps, iv, 92.
Almonds—culture, varieties and various preparations, ii, 120-123; weights, sources, and seasons, ii, 142, 268.
Alum in flour or bread, ii, 227, 229.
Amber Paint and Varnish, iv, 110, 119. [185.]
American Anchovies—tinned, iii.
American Apples, ii, 250, 251; evaporated, ii, 129.
American Bacon and Ham—pig breeding and slaughtering, iii, 96, 99-101; Danish compared, iii, 13.
American Beef, iii, 194, 195.
American Canning Trade, iii, 166.
American Cheeses, iii, 70, 77, 93.
American Coffees, ii, 65-67, 78, 80.
American Crops, ii, 1, 2, 4, 5.
American Eggs, iii, 17; classification, &c., for market, iii, 126, 127; cold storage and canning, iii, 135, 136, 138.
American Food Standards and definitions, iii, 250-255.
American Lards, iii, 64-66, 69.
American Margarine, iii, 55, 58, 59.
American Methods and Shops—
 Advertisement value, i, 90, 196.
 Arrangement of stores, iv, 7.
 Assistants—rules, &c., i, 149, 196.
 Cash, credit, and book-keeping systems, i, 100, 247-249.
 Learning the trade—opinions, i, 7.
 Opening-day methods, i, 107-109.
 Stock terms—sale conditions, i, 158.
 Tea official inspection, ii, 43, 58.
 Traveller or "drummer", i, 149.
 Typical shops, i, 35, 44-47.
 Window-dressing, i, 196, 204, 205.
American Paints, iv, 113-115.
American Petroleum, iv, 65-68.

American Pork and hog-packing, iii, 14.
American Prune Industry, ii, 135.
American Sardines, iii, 183-185.
American Wines, iv, 159.
Analysts and food laws administration, iv, 234-236.
Anchovies—tinned, iii, 185.
Anchovy Paste, iii, 187.
Angel's Food, ii, 253.
Aniline Dye, iv, 130.
Animal Fats in margarine, iii, 54, 56.
Animal Oils—from fish and marine mammals, iv, 44-49; land animals, iv, 49-51; specific gravity, iv, 76.
Annatto, iv, 130.
Apollinaris Water, iv, 186.
Appert's process for sterilizing food—
 Apples— [stuffs, iii, 216.]
 Canadian law as to selection and export, ii, 249.
 Cider manufacture, iv, 184, 185.
 Cold storage, ii, 250; iii, 232, 233.
 Preserved forms and methods—
 bottled, ii, 201, 203; compressed, iii, 223; dried, ii, 127-130; jelly, ii, 210; pulp and juice, ii, 204, 205.
 Varieties, qualities, seasons, and sources of supply, ii, 248, 249; U.S.A. crop, ii, 250, 251.
Apprenticeship—
 Disuse and signs of revival, i, 6, 109.
 Indentures—simple form, and for transfer of services, i, 109, 110, 113.
 Legal points, i, 110-113.
 Moral obligations, &c., i, 113, 114.
 Old-fashioned training and living-in system, i, 15, 114.
 Provision department experience—value of, iii, 239. [i, 111, 112.]
 Qualifications and premium required, Registration scheme, i, 119.
 Wages, accidents, off-time, &c., i, [112.]
Apricots—
 Dried, evaporated, and crystallized—source of supply and preparation, ii, 21, 127, 129, 130, 141.
 Preserving methods—bottled, ii, 201, 203; jam, ii, 206; pulp, ii, 204.
Arabian Coffee, ii, 59, 60, 61, 62, 63, 66, 68.
Arbitration for grocers, i, 117.
Arctic Sperm Oil, iv, 48, 76.
Armenian Bole, iv, 115.
Army and Navy Stores—classification of departments in, iv, 6.
Arrowroot, ii, 109, 110; not guaranteed pure, iii, 263.
Arrowroot Biscuits, ii, 232.

Arsenic in food-stuffs—Royal Commission report on, &c., iii, 247-249; beer testing, iv, 181, 182.

Arsenical Soap, iv, 93.

Artichokes—preserved, iii, 217, 218.

Ash—in tea, ii, 39, 40, 41; in coffee, ii, 69; in cereals, ii, 108.

Asparagus—preserved, iii, 217.

Aspic Jelly, ii, 208, 211.

Assam Teas, ii, 23, 25, 29, 30; blending uses, &c., ii, 49, 50, 53.

Assistants and their Duties—
 Accident compensation, i, 112; iv, 244.
 Agreements for employment, and dismissal, i, 122, 123, 126, 127.
 Applications for situations—advertising, letters of application and engagement, i, 119-123.
 Aprons and dress, i, 139. [ship].
 Art of salesmanship (see Salesman).
 Bonuses (see Commission System).
 Branch shop staff, i, 256, 257.
 Cellarmen, porters, and vanmen—work of, i, 132, 133, 134.
 Clerks' and cashiers' duties, i, 131, 132.
 Colonial regulations, &c., i, 116, 117.
 Cost prices of stock—assistants' knowledge of, i, 180, 181.
 First, second, and other hands—work of, i, 129-131, 133.
 Holiday periods, i, 116, 117, 136.
 Illness and absence, i, 112; iv, 244.
 Laws on hours, seats, employment of children, enforcement of shop rules, &c., iv, 242-244.
 Legal responsibilities under food laws, i, 139; iv, 240, 241.
 Living-in and living-out systems and allowances, i, 114-116.
 Opening a new business, i, 97, 103.
 Parisian "family fathers" and syndicate supervision, &c., i, 117, 118.
 Provision hands—duties and qualifications, i, 134; iii, 236-239.
 Qualities of a successful assistant, i, 141, 142.
 Registration scheme, i, 118.
 Regular duties and shop routine, i, 176, 177; in London and provincial shops, i, 129-133, 134.
 Restraint of trade, i, 125, 126.
 Shop rules (see that title).
 Wages and Hours—living-in and living-out allowances, i, 115, 116.
 Colonial scale, &c., i, 116, 117.
 Law and circumstances governing fixture of wages, i, 114.
 Meal hours and closing of shop during, i, 134, 135, 136.

Associations for Grocers—
 Benefits by membership, iv, 270-272.
 Fixing of profits—policy of "living profit" on goods sold, iv, 259.
 Grocer companies and guilds (see that title).
 Paper wrapping weights, iv, 249.

Astakti from Russian petroleum, iv, 68.

Auditors, services, i, 236, 237, 238-242.

Australian Butter and other produce, iii, 10, 11.

Australian Meat—frozen and tinned, iii, 166, 169, 191, 194.

Australian Methods and Shops—
 State supervision over quality and exportation of provisions, iii, 11.
 Typical shops—description, i, 40, 41.
 Wages and conditions of labour, i, 116, 117.

Australian Rabbits and Hares—
 export trade, &c., iii, 203.

Australian Wines, iv, 159.

Austrian Wines, iv, 159.

Autograph Machine, i, 245, 246.

Automatic Scales, &c., i, 85, 86.

B

Bacon and Hams—
 Cold storage, i, 46; iii, 231.
 Cooking hams, &c., iii, 120, 203.
 Curing methods and tests, iii, 101-103; sugar-cured hams, iii, 107; home-cured bacon, iii, 240.
 Cutting-up and Handling—
 Advice on cutting, iii, 117-120.
 Care during summer months, and washing, &c., of, iii, 118, 241.
 Cuts recognized in trade, and trade terms used, iii, 105-107.
 Cutting-up for profit, cutting up sides, &c.—diagrams, directions and scale of prices, iii, 112-116, 119, 120, 241, 242, 244.
 Duties of staff, iii, 237-239.
 Machine for slicing, i, 82.
 Oyster bone, iii, 117, 119, 120.
 Shrinkage in drying and leakage—allowances, i, 271; iii, 110-112.
 Demand for home and factory-cured products, iii, 94, 95, 240.
 Display on counters, in windows, i, 26, 32, 172, 203; iii, 119, 121, 237.
 Drying process, iii, 102, 109, 110; shrinkage and profit loss, iii, 110-112.
 Dunmow flitch, iii, 121.
 Early uses, &c., i, 10, 11.
 Pig-breeding and feeding, iii, 95-98; pig slaughtering and dressing, iii, 98-101.
 Potted ham—preparation, iii, 187, 188.
 Selling—practical hints, iii, 117-120, 237; law as to, iii, 260.
 Smoking and branding, iii, 102-104.
 Sources of supply, iii, 13, 14, 94, 95-98.
 Stock and brands—hints on buying, i, 103, 143, 154; choice and price-list quotations, iii, 104, 105, 240, 241.
 Tainted bacon, iii, 107, 108.
 Weights and sizes to suit various towns, iii, 108, 109.

Bake-house—license, &c., iv, 24, 25.

Baker's Bread, iii, 224, 225.

Baking Powder, ii, 226, 227, 229, 237; warranty, iii, 263; legal definition, iv, 228.

Bananas, ii, 251, 252; cooking, trimming, &c., ii, 253, 254.

Bank Transactions, &c.—
 Accommodation bills, i, 254.
 Bills of Exchange, i, 253-255.
 Book-keeping, i, 255, 256.
 Crossed cheques, i, 251, 252, 255.
 Honouring, dishonouring, stopping payment of a cheque, i, 252, 253.
 Making out, endorsing, and cashing of cheques, i, 250-252, 255.
 Opening an account—procedure, i, 77, 78, 97, 249, 250.
 Paying-in cheques and monies, i, 249, 250, 252, 255.
 Promissory note, i, 253, 254.

Bankruptcy Laws and book-keeping, i, 222.

Barley, barley-meal, and flour, &c., ii, 100, 101; supply and weights, ii, 3, 107.

Barley-sugar and sweets, ii, 243.

Barm for bread, ii, 222.

Barrels and Casks—spirit barrels, cleaning restrictions, iv, 168; storage of stock in, i, 171 (see also [Empties]).

Base Oils, iv, 63.

Basket-packing, i, 214, 216.

Bath-brick, iv, 121.

Bavarian Beers, iv, 180.

Bay-salt, ii, 192.

Beef—buying, iii, 202; frozen and chilled, iii, 194, 195; potted and compressed, iii, 188, 223; tinned, iii, 167-169; weights, iii, 192.

Beef Extracts, iii, 176-179.

Beef Fat in lard, iii, 68, 69.

Beef Loaf for sandwiches, iii, 169.

Beef Sausages, iii, 172.

Beer and other Beverages—
 Aerated waters, iv, 185-187.
 Arsenic in, and adulteration of beer, iii, 247, 248; iv, 181, 182.
 Bottling and the use of corks *v.* screws, collection of empties, &c., iv, 183, 184, 191-193.
 Brewing beer and stout, iv, 19, 146, 178, 179. [iv, 179-181].
 Chief constituents of beer and stouts, and cider and perry, iv, 184, 185.
 Colouring matters used, iv, 130-132.
 Fining and mixing of beer, offences under beer laws, &c., iv, 182, 183.
 Colouring matters used, iv, 130-132.
 Licenses and regulations for sale of beer, iv, 19, 20, 21, 23, 24. [187].
 Lime-juice and other "cordials", iv.
 Mineral waters (see that title).
 Non-alcoholic beverages, iv, 185; fermented and summer drinks, iv, 187-189; temperance drinks, iv, 189, 190.
 Bees'-wax, iv, 81, 82, 228. [190].

Beetles on premises, i, 173.

Benedictine, iv, 164, 165.

Benzoline, iv, 34, 41, 67.

Bergmehl Stone, iv, 122.

Beverages (see title Beer and other Beverages).

Bills of Exchange, i, 253-255.

Biltong Meat, iii, 175.

Bins, i, 45, 46, 67, 68, 80.

Bird-lime, iv, 138.

Biscuits—making and analysis, &c., ii, 230-232, 236; storage and colour, ii, 236; varieties, ii, 233-235; iii, 216.

Bitter Almonds, ii, 122, 123.

Bitters, iv, 166, 179.

Black Coffee, ii, 74.

Black Currant Jam, ii, 206.

Black-lead, iv, 126.

Black Paints, iv, 107, 108, 110.

Black Puddings, iii, 173.

Black Teas, ii, 24, 34, 35.

Blackening, iv, 124, 125.

Blinds for windows, i, 212, 213.

Blown Oils, iv, 63.

Blubber Oils, iv, 21.

Blue Paints, iv, 108, 109.

Blues for laundry use, iv, 141.

Bodon Cheese, iii, 70.

Bohea Tea, ii, 31, 37.

Boiled Beef—tinned, iii, 167, 192.

Boiled Oil, iv, 60.

Bologna Sausage, iii, 173.

Bon-Bons, ii, 244.

Bondon Cheese, iii, 87, 93.

Bone Oil, iv, 50, 76.

Bonuses to staff, &c. (see Commission System).

Book-keeping—
 American system, i, 247-249.
 Auditors' services, i, 236, 237, 238.
 Balance-sheets, i, 224, 235-237, 242, 258; stock-taking specimen, iv, 264.
 Books required and methods of keeping, i, 225-227.
 Buying and custody of books, i, 97, 98, 221, 222.
 Order books, i, 179, 180, 218.
 Private books—cash-books and capital, i, 230-233; ledger and trading account, i, 230-233, 234, 235.
 Shop books, i, 227-230, 244, 246; Colonial, American, and other methods, i, 245-249; iv, 263, 265.
 Bottles, "empties", iv, 192.
 Branch shop, i, 258, 259, 261, 262.
 Cash-taking systems, &c., i, 175, 176; iv, 263.
 Clerk or book-keeper—wages and duties, i, 116, 131, 132, 138, 139.
 Colonial methods, i, 244-247.
 Company shop rules, i, 266.
 Compulsory book-keeping—law on, i, 222, 223.
 Country trade, i, 247.
 Daily record system, i, 243.
 Department stores, iv, 10, 11, 263, 264.
 Double entry system and modifications, i, 224, 225.
 Expenses at time of balancing, separate private and trading expenses, i, 236; specimen expenses book, iv, 264, 265.
 Memoranda keeping, i, 244, 249.
 Month-by-month system, i, 243, 244.
 Returns—dealing with, i, 247.
 Single-entry system, i, 223, 224.
 Stock-taking (see title Stock).
 Weekly summary of trading, iv, 264.
Booming a shop, i, 105-109.
Boot Polishes, &c., iv, 124, 125.
Boric Acid and boron preservative in butter, iii, 25, 41, 42, 43, 44; cheese, iii, 74; milk and cream, iii, 155, 156, 164, 165; potted goods, iii, 191.
Bosnian Plums, ii, 132, 136.
Bottle-nose Oil, iv, 48.
Bottled Fruits (see Preserves).
Bottled Goods—storage, i, 168, 169.
Bottled Table Jellies, ii, 211.
Bottles, "empties"—collecting, &c., i, 183; iv, 191-193.
Bottling of Beverages (see titles Beer and other Beverages, Wines Bouilli, iii, 211. [and Spirits]).
Boxes—return or sale of "empties", i, 167; ready-made boxes, i, 213.
Bra Cheese, iii, 70.
Bradenham Hams, iii, 99.
Braised Beef—tinned, iii, 169.
Branch Shops—
 Company shops—leakage system, and charging of stock, i, 270-272.
 Management and development—advice on, i, 256-258; iv, 2.
 Management system in use—
 Cash, book-keeping, and weekly circular, i, 258, 259, 261, 262.
 Grocery dept., i, 260, 261, 263, 264.
 Provision dept., i, 259, 260, 262, 263.
 Staff, i, 256, 257. [263].
 Stock-taking and balance-sheet, i, 264.
 Brands, iv, 160, 161. [258].
Brands of Goods—policy of changing, i, 99, 102, 148; iii, 261.

Brass Polishing, &c., iv, 127.
Brazilian Coffee and apparatus, ii, 61, 62, 63, 65, 66, 67, 68, 86.
Bread—
 Adulteration, ii, 229, 230.
 Baking powders for, ii, 226, 227, 229.
 Description and preparation of various breads, ii, 221, 223-228.
 Flour—adulteration, ii, 229, 230; brands, yield of loaves, ii, 223, 226.
 Heavy loaves—cause of, ii, 228, 229.
 Mixing, &c., ii, 221, 222, 223.
 Wheat percentages in a loaf, ii, 4.
 Yeast and leaven used, ii, 222.
Breadstuffs—British loaf, wheat percentages in, ii, 4; sources of supply, ii, 2, 3; problem for 1931, ii, 8.
Breakages—railway claims, iv, 253, 254; shop rules, &c., i, 137, 260, 264.
Brick Tea, ii, 37.
Brie Cheese, iii, 70, 75, 86, 92.
Brine Salts, ii, 191, 192.
Brioches, ii, 239.
Bristles for brush-making, iv, 101, 102.
British Cheeses, iii, 70, 71.
British Food Supplies—contributors, ii, 1, 2, 4.
British Shops compared with American stores, i, 44.
British Wines, iv, 149.
Bronzes for copper, &c., iv, 117.
Broths—tinned, &c., iii, 213.
Brown Bread, ii, 227, 228.
Brown Paints, iv, 109, 110.
Brown Stock and Sauce, ii, 196.
Brown Windsor Soap, iv, 92.
Brunswick Black and Green, iv, 107, 109.
Brushes and Brooms—
 Bass-broom and origin of name, iv, 100, 101.
 Lists of kinds, iv, 27, 29, 100.
 Manufacture, iv, 101, 102.
 Stocking and selling, iv, 103-105.
 Storage, &c., i, 164, 170, 172.
 Treatment of brushes, iv, 105.
Burgundy Wines, iv, 149, 152.
Burners for lamps, iv, 38.
Burning Oils, iv, 66, 67, 69, 70.
Business—purchase, &c. (see Capital and Business).
Butcher's Shop, iii, 201, 202.
Butter and Butter-making—
 Adulteration and Analysis, iii, 39, 43.
 Detection of water, acid, fat, &c., iii, 43-45; detection of margarine and other fats, iii, 45-49.
 Dutch butters—alleged adulteration, &c., iii, 48, 49, 57, 58.
 Reichert method and number, specific gravity, and Valenta tests, iii, 42, 46-49. [257].
 Warranty against adulteration, iii, 41.
 Artificial, mixed, imitation butters and substitutes, iii, 53, 56, 57, 61.
 Cold storage, i, 46; iii, 231, 233-235.
 Colouring and causes of bad butter, iii, 22, 23, 38, 39. [19, 39, 43].
 Composition and Ingredients, iii, 18.
 Butter-fat, iii, 39, 42, 43, 45.
 Cattle-foods—effect on flavour, &c., iii, 21, 35, 49-51.
 Chemical composition, iii, 39-41, 43, 45.
 Difference of margarine, iii, 59.
 Preservatives, iii, 41, 42, 44.

Butter and Butter-making (*Cont.*)
 Display in shops, i, 26, 31, 33, 67, 75.
 Early uses of butter, i, 10, 17.
 Factory v. dairy butter compared, iii, 26.
 Factory production, iii, 23, 24-26; quality of milk bought, iii, 151.
 Flavour and rancidity, iii, 35, 36, 38.
 Handling and cutting-up, iii, 51-53, 243, 244; shop rules, i, 265, 267.
 Judging and testing, iii, 36, 37.
 Law as to sale of, and legal definition of butter, iii, 57; iv, 227, 230, 231, 235. [19-23].
 Processes in butter-making, &c., iii, 39.
 Sources of supply, iii, 3, 4, 5-7, 8, 9-11, 12.
 Standards for, iii, 249, 251, 255.
 Stock purchase, i, 96, 143, 145, 154; iii, 27, 28, 51; seasons for, iii, 247.
 Storage, and keeping quality, i, 163; iii, 37, 38, 51, 52.
 Varieties, and use of terms "Kiel" and "Danish" butter, iii, 27, 28.
 Vegetable butters, iii, 61, 62.
 Wholesale marks, weights, and prices, iii, 27-29, 30, 31; London market, iv, 257.
 [See also titles Colonial, Danish, Dutch, French, Irish, Russian.]
Butter-fat—in butter, iii, 39, 42, 43, 45; in margarine, iii, 60; rancidity, iii, 35.
Butterine (see Margarine). [iii, 35].
Butterine Oil, iv, 59.
Butter of Mace, ii, 177.
Butter Oils, iii, 42, 61.
Butter Scotch, ii, 243.

C

Cabbage, Pickled, ii, 217, 218.
Cacio-Cavallo Cheese, iii, 70, 71, 78.
Caerphilly Cheese, iii, 70, 87.
Caffeine, &c., in coffee, ii, 68, 69.
Cakes—making of, ii, 237-239.
Cakes of Milk, iii, 156.
Calf's Foot Jelly, ii, 208, 209, 211.
Californian Fruits—dried apples, &c., ii, 129, 130; plums and prunes, ii, 132, 135, 136; raisins, ii, 139; preserved fruits, ii, 203.
Californian Oil, iv, 54.
Californian Wines, iv, 159.
Cambridge Sauce, ii, 196. [92].
Camembert Cheese, iii, 70, 75, 88.
Camphorated Sulphur Soap, iv, 160.
Canadian Apples, ii, 249. [93].
Canadian Bacon and Ham, iii, 240, 241; pig-feeding, &c., iii, 96; weights and sizes, iii, 108.
Canadian Butter, iii, 12, 255, 256.
Canadian Cheese, iii, 77, 93, 242.
Canadian Dairy Produce, iii, 9-11.
Canadian Frozen Meat, iii, 195.
Canadian Turkeys and Poultry, iii, 206, 208.
Canadian Wheat, ii, 2, 5.
Candied Peel, ii, 139, 140.
Candles— [99, 100].
 Classification and varieties, iv, 96.
 Early uses and preparation, iv, 95, 96.
 Illuminating power, iv, 84.
 Manufacture, iv, 81, 96, 97-99.
 Storage, i, 169.
Candy and Fancy Candy, ii, 241, 242; iii, 253.

- Canned Goods** (see Tinned Goods).
- Canning trade and principles**, iii, 166, 167; sterilizing process, ii, 200.
- Cape Gooseberries**, ii, 267. [201.]
- Caper Tea**, ii, 35, 37.
- Capers**, ii, 170, 171.
- Capillaire**, ii, 164.
- Capital and Business**—
 Amount of capital to start, i, 47-50; minimum amount, i, 55-58; starting on various sums, i, 73-77.
- Capital account**, &c., i, 233.
- Good-will purchase**, i, 50-52, 54; deed of purchase, &c., i, 60-62.
- Landlord and tenant negotiations**, i, 62-65.
- Setting up for oneself**, i, 60. [144.]
- Stock—first purchase**, &c., i, 96, 97.
- Success from different starting-points**, i, 57, 58.
- Tied houses—agreement**, i, 59, 60.
- Trade credit** (see Wholesale Terms).
- Valuation of business**, i, 49.
- Working capital and gross profit**, i, 53, 54.
- Capsicums**, ii, 184, 185, 186.
- Caramels**, ii, 243, 246.
- Caraway Cheese**, iii, 71.
- Carbide of Calcium—sale and use regulations**, iv, 18, 34.
- Carbon Duplicators**, i, 244, 259.
- Card Index—uses**, i, 147, 148, 179.
- Cardamoms**, ii, 169, 170.
- Carnauba Wax**, iv, 82. [221; iv, 15.]
- Carriage License and exemption**, i, Casein in cheese, iii, 71, 73; in milk, ii, 147, 148, 153, 161.
- Cases for shops**, i, 67, 68.
- Cash Books**—
 Branch shops and company shop rules, i, 259, 261, 266.
- Methods of keeping**, i, 226, 229, 230.
- Private cash books**, i, 230, 231, 233.
- Cash Railways**, i, 26, 29, 88, 89; iv, 2.
- Cash Systems**—[10.]
 Branch shop, i, 257, 258, 259, 261, 262.
- Cash-on-delivery system**, i, 102.
- Company shop**, i, 269.
- Credit v. cash systems**, 99-102, 104.
- Taking cash in shop**, i, 174-176, 246; iv, 263.
- Cashier**—
 Branch shop, i, 257, 258, 259.
- Duties and engagement**, i, 131, 132, 174-176, 255, 256; shop rules on, i, 136, 137, 138, 139; wages, i, 116.
- Cashier, Mechanical**, i, 87.
- Casks** (see Barrels).
- Cassareep**, ii, 115. [114, 115.]
- Cassava and Cassava Bread**, ii, 218.
- Cassia**, ii, 167, 168, 169, 178; iii, 253.
- Castille Soap**, iv, 90.
- Castor Oil**, iv, 63, 76.
- Castor Sugar**, ii, 146, 149.
- Cattle—foods—effect on milk**, &c., iii, 21, 35, 49-51; sale, iv, 220.
- Cattle-slaughtering**, iii, 195-199.
- Cauliflower**, Pickled, ii, 217, 218.
- Caviare**, iii, 189-191. [219, 220.]
- Cayenne Pepper**, ii, 184, 185, 190; American standards, iii, 253.
- Cellars—duties of cellarman**, i, 132; storage of stock, i, 163, 164, 172; wine and beer cellars, &c., iv, 167-170, 182. [169.]
- Cellulose in tea and coffee**, ii, 39, 40.
- Cements and Pastes for mending**, Cerasine, iv, 85. [iv, 138-140.]
- Cereals**—
 Analyses for constituents and adulteration, ii, 108. [ii, 94, 95, 117.]
- Description, varieties and diseases**, New foods from Yucatan, ii, 104, 105.
- Sources of supply** (see that title).
- Wholesale weights**, ii, 107.
- [See also titles Barley, Dari, Maize, Oats, Rye, Wheat, &c.]
- Ceylon Coffee**, ii, 30, 62, 66, 77.
- Ceylon Teas**, ii, 10, 11, 26-29, 30, 31, 57; blending, ii, 44, 50, 53.
- Chamois Leather**, iv, 124.
- Champagnes**, iv, 149, 150, 152-154.
- Charcoal**, iv, 107.
- Charqui Beef**, iii, 176.
- Chartreuse**, iv, 164, 165.
- Check-tills**, i, 86-88, 175, 246, 257.
- Checking of Goods**, i, 164, 167, 180, 214, 215.
- Cheddar Cheese**—analysis and weights, iii, 93; classification and districts, iii, 70, 71, 75, 76; manufacture and kinds, iii, 74, 76, 77, 85, 86; selection, iii, 242. [iii, 257.]
- Cheese**—
 Adulteration—warranty, &c., against, American definition and standards, iii, 251, 252.
- Buying, handling, stocking and storage**, i, 143, 145, 154, 163; iii, 93, 94, 242, 243, 244, 247; weights, iii, 93. [iii, 90-92.]
- Characteristics, &c., of a good cheese**, Cheese-mite, maggots, &c., iii, 94.
- Chemical constituents of hard, soft, and cream cheeses**, iii, 92, 93.
- Classification of hard and soft, British and Foreign cheeses**, iii, 70, 71; naming from size or shape, iii, 92.
- Cold storage**, i, 46; iii, 231, 235, 236.
- Description of kinds—hard cheeses**, iii, 76-86; soft and cream cheeses, iii, 86-89. [33, 37.]
- Display on counters, &c.**, i, 26, 32.
- Imitation cheeses**, iii, 15, 89, 90.
- Manufacture**, iii, 71-74; flavour, appearance, districts, iii, 75, 76, 90.
- Milk for making**, iii, 71, 72, 76.
- Sale regulations**, iii, 260; iv, 231, 232, 235.
- Sources of supply**, iii, 13, 15.
- [For special cheese, see its title.]
- Cherries—preserved and bottled**, ii, 201, 203.
- Cherry Brandy**, iv, 165.
- Cheshire Cheese—classification**, iii, 70, 71; manufacture, varieties, analysis and weights, iii, 77, 78, 92, 93.
- Cheshire-Stilton cheese—process**, iii, 78. [196-199.]
- Chicago Cattle-slaughtering**, iii, 196-199.
- Chicago Cold Storage**, iii, 226-229.
- Chicago Shops**, i, 196.
- Chicken Broth**, iii, 213.
- Chickens—in jelly and tinned goods**, iii, 172; for market, iii, 208.
- Chicory**, ii, 70-72, 76; buying, ii, 78; sale regulations, ii, 73; iv, 225, 226.
- Children—as customers**, i, 193, 194; employment regulations, iv, 243; sale of liquors regulations, iv, 24.
- Chilled Meat** (see title Frozen and Chilled Meat).
- Chillies**, ii, 23, 185, 186.
- China and Earthenware—department for**, iv, 216-218.
- China Teas**—
 Blending and keeping qualities, ii, 44, 49, 50, 57. [31.]
- Origin and history of tea**, ii, 23, 24.
- Preparation and kinds—green**, ii, 31-34; black, ii, 34-37; brick and lie teas, ii, 37; seasons, ii, 51.
- Sources of supply, &c.**, ii, 10-12, 31, 137. [37.]
- Chinese Cement**, iv, 137.
- Chinese Shop**, i, 39.
- Chinese Wax**, iv, 83.
- Chinese White for paint**, iv, 107.
- Chinese Wood Oil**, iv, 62, 76.
- Chlorophyll**, iv, 131.
- Chocolate** (see Cocoa and Chocolate).
- Chocolate Ice-cream**, ii, 247.
- Chocolate Icing**, ii, 239.
- Chocolates, Fancy**, ii, 93, 244-246.
- Chow-Chow Pickles**, ii, 220.
- Christmas Lists and Christmas club-advertisements**, iv, 267, 268.
- Christmas Pudding**, iv, 267.
- Cider—license for sale**, v, 21; preparation and kinds, iv, 184, 185; vinegar, ii, 216.
- Cigars and Cigarettes** (see Tobacco).
- Cinnamon—American standards**, iii, 253; preparation, varieties, adulterants and oil of, ii, 168, 169; sources and weights, ii, 22, 178.
- Circulars** (see Advertisements, Price-Lists).
- Citrons**, ii, 261, 262. [Lists.]
- Clarets**, iv, 154, 155, 158, 159, 173.
- Classes for grocers' assistants**, i, 2.
- Clerks—duties, &c.**, i, 131, 132.
- Clotted Cream**, iii, 21, 164, 165.
- Clove Oils**, ii, 172, 173.
- Cloves—American standards**, iii, 254; culture, adulteration, and various preparations, iii, 171-173; sources of supply, ii, 23; weights, ii, 178.
- Coal-tar Colours**, iv, 110.
- Cochineal**, iv, 131.
- Cockie-Leekie Soup**, iii, 211.
- Cocoa and Chocolate**—
 Adulteration and sale restrictions, ii, 92; iii, 262, 264.
- American definitions and standards**, iii, 255. [93.]
- Analyses and constituents**, ii, 90, 91.
- Culture of seeds, "nibs" production, marketing, &c.**, ii, 87-89, 92.
- Food properties**, ii, 92.
- Manufacture and varieties of prepared cocoa**, ii, 90-92; chocolate and fancy preparations, ii, 93, 244-246. [16, 17, 93.]
- Sources of supply and weights**, ii, 92.
- Cocoa Butter**, ii, 17, 90; iii, 61.
- Cocoa-nut Butter or Oil** (copra oil), iii, 61; iv, 57, 58, 59, 76; weights, iv, 42.
- Cocoa-nut Icing and ice-cream**, ii, 239, 247.
- Cocoa-nuts**, ii, 268. [239, 247.]
- Cod-liver Oil**, iv, 45, 46, 76.
- Coffee Ice-Cream**, ii, 247.
- Coffees**—
 Adulteration and substances mixed with coffee, ii, 70-73; law on, iv, 224-227.
- Beans and cherries—growth**, ii, 60, 61; preparation, ii, 63-65.
- Blending**, ii, 76, 77.
- Botanical description and origin of shrub**, ii, 59-61. [iv, 258.]
- Buying of stock**, i, 154; ii, 77, 78.
- Chemistry, constituents and analysis**, ii, 68-70.

Coffees—(Cont.)

Chicory for mixing with, ii, 71-73, 78.
 Consumption in Britain—decadence, ii, 76. [65]
 Cultivation and manufacture, ii, 62-
 Department fittings, arrangement, &c., i, 45, 46; iv, 9.
 Description, &c., of kinds, ii, 66-68.
 Characters of commercial coffees, ii, 65, 66.
 Essences and extracts, ii, 74.
 French coffee, ii, 72, 78.
 Gombo, and black coffee, ii, 73, 74.
 Highland coffee, ii, 61.
 How to make good coffee, ii, 85-87.
 Keeping, packing, and handling, ii, 74, 75, 79, 81, 85.
 Roasting Coffee—
 Advantages, or "Is it worth while to Roast?", ii, 81-85.
 Changes produced by, ii, 69, 70.
 Mills, roasters, and room, i, 81-84, 164, 173; ii, 76.
 Processes of roasting, glazing, &c., ii, 76, 79-81, 83, 84.
 Sale Regulations, &c.—
 Art of salesmanship, i, 193; ii, 85.
 Branch shop, i, 260, 263.
 Mixtures, substitutes, and warranties, ii, 72-74; iii, 262, 264.
 Weighing with paper bags, iv, 248, 249.
 Sources of supply, ii, 12-14; various coffees, ii, 14-16.
 Substitutes for coffee, ii, 72-74.
 Wholesale weights, auctions, and seasons, ii, 75; iv, 258.
Cognac Brandy, iv, 160, 161.
Cokos, iv, 190.
Cold Storage and Refrigeration—
 American shop fittings, &c., i, 46.
 British public stores, iii, 230, 231.
 Chicago systems, 226-229.
 Compression machines, iii, 229.
 Customs adopted by retailers, iii, 224.
 Ice-boxes for, iii, 230.
 Ice-making machines and small cold storage installations—costs, &c., iii, 229. [iii, 1-3, 193, 194, 225]
 Introduction, &c.—influence, ii, 248;
 Systems, iii, 227-229; street pipe system for hotels, &c., iii, 229.
 Temperatures, iii, 231-233.
 Various uses of refrigeration, iii, 226.
 [See also titles Butter, Cheese, Eggs, Cold-water Soap, iv, 95. [&c.]
Colonial Butter, Dairy, and other Produce—
 Butter—official grading, &c., iii, Coffee, ii, 15.
 Eggs—cold storage, iii, 137, 138.
 Sagos, ii, 112, 113. [12]
 State aid in dairying, &c., iii, 9-11.
 Tallow, iv, 80.
 Tea, ii, 38, 42, 43.
 Wheat and other agricultural supplies, ii, 1, 2, 3, 4, 6.
Colonial Shops and Methods—
 Assistants, i, 116, 117.
 Book-keeping, i, 222, 245-247.
 Buying stock, i, 145-147, 148.
 Typical shop and window dressing, i, 35, 40, 206, 207.
 Colouring Matters for dyeing, and in foods, &c., iv, 130-132; tea, ii, 40-42; wines, iv, 152.
Colours (see title Paints and Colours).

Comfits, ii, 241. [i, 1, 2]
Commercial Education for grocers,
Commercial Phrases, i, 161-163.
Commission System—commissions to staff, i, 36, 116, 133, 193, 258, 272; embezzlement by agents, &c., iv, 245.
Company Shops—
 Engagement of staff, i, 122-126.
 Influence on grocery trade, i, 23.
 Management rules, i, 265-270, 272.
 Assistants and duties, i, 135-138.
 Leakage allowances, i, 270-272.
 Opening-day methods, i, 106, 109.
Competition in Trade—proprietary articles, iv, 205; retailer's company shops, stores, &c., i, 35, 102; iv, 1, 5.
Competitions—opening day, i, 107; window-dressing, i, 199.
Complaints of Customers, i, 195.
Compressed Vegetables and other foods, iii, 222-224.
Condensed Milk— [162]
 Advantages in use, and storage, iii.
 Composition, analysis, &c., iii, 158-162; standards for, iii, 249, 251.
 Discovery, preparation, and classes of, iii, 156, 157, 158.
 Sale regulations and guarantee, iv, 227, 231, 259.
 Sweetened v. unsweetened milk, iii, 158, 159; analysis, iii, 160, 161.
Condiments—classification, &c., ii, 166, 178; sources of supply, i, 23.
Confectionery— [116]
 Cakes and Chocolates (see those)
 Classification of confectionery and sweets, ii, 239, 240.
 Colouring and flavouring substances, and oils used, ii, 239, 240.
 Sale regulations, iv, 197.
 Various sweets, ii, 240-244.
Congou Tea, ii, 39, 40.
Consommé, iii, 211, 216. [248]
Contracts for sale of goods, iv, 246-
Cookery Lectures in shops, i, 46.
Cooking Meat—directions, iii, 203.
Co-operative Stores and Societies—
 French grocers and competition, i, 35.
 Influence on grocery trade, i, 7.
 Management of typical stores, i, 34.
 Training of employees, i, 7. [87]
Copal Varnish, iv, 120.
Copper for Greening Vegetables—
 use, &c., ii, 171; iii, 218-221, 262.
Cordials—making and licenses, iv, 164-166, 187.
Corks, iv, 145, 183, 191.
Corn, Canned, iii, 221.
Corn-flour, ii, 103, 115; iii, 263.
Corn Grits, ii, 103.
Corn Sugar, ii, 157, 158.
Corned Beef—tinned, iii, 168.
Cost Prices—assistants' knowledge, i, 180, 181; marks on goods, i, 168.
Costa Rica Coffee, ii, 66, 67, 76, 77.
Cotherstone Cheese, iii, 70, 78, 85.
Cottenham Cheese, iii, 70, 79.
Cotton-Seed Oil—adulteration uses, iii, 56, 59, 60, 63, 68; preparation, uses, and specific gravity, iv, 62, 76; weights, iv, 42.
Coulommiers Cheese, iii, 70, 88.
Counter Dressing, i, 25, 28, 30, 31, 33, 37, 40, 42, 44, 45, 46.
Counter Fittings, &c., i, 68, 69, 72, 73, 74, 75. [246, 247]
Counter Sales Check Book, i, 244,

Country Orders, i, 179, 216, 217, 247.
Country Shops—assistants, i, 134; stock, i, 144; system, i, 178, 179.
County Court Procedure—collection of debts, &c., iv, 249, 250.
Cracknels, ii, 233.
Cream, and Factory Treatment—
 American definition and standard, iii, 251.
 Analysis, composition, grades and quality of cream, iii, 147, 148, 163.
 Cheeses made from, iii, 71. [164]
 Clotted or Devonshire, and potted cream, iii, 21, 162, 164, 165.
 Description of factory methods, iii, 23, 24-26. [stances, iii, 164, 165]
 Preservatives and thickening substances, iv, 231. [164]
 Separation from milk, iii, 19, 20, 21.
Cream Cheeses, iii, 70, 71, 88, 89, 93.
Cream of Tartar, iv, 132, 263, 264.
Credit Sales—posting, i, 228, 246.
Credit Systems—
 Cash v. credit, i, 99-102, 104.
 Chinese and Boer methods, i, 39, 42, 43. [180, 184, 218]
 Customers and their orders, i, 179.
 Purchase of long-credit business, i, 48.
 Wholesale terms, i, 58, 59, 96, 158.
Creosote Oils, iv, 43.
Crystal Oil, iv, 67, 70.
Crystall Sugars, ii, 149.
Crystallized Fruits, ii, 140, 141, 174.
Crystals, Sugar—analysis, ii, 155; large and small crystals, ii, 144, 145; yellow crystals and imitation Demerara, ii, 153, 154, 156.
Cubebs, ii, 170.
Cubes of sugar, ii, 145, 149.
Cucumbers—pickling, &c., ii, 217.
Cumberland Bacon, iii, 103, 105, 106.
Curacao, iv, 164, 165.
Curad and Whey—American standard, iii, 252; analysis of milk, iii, 147; in butter, iii, 39, 40; in cheese, iii, 71, 73, 74.
Curd Soap, iv, 88, 89.
Currants—culture of vines, ii, 123; law in Greece, ii, 124; machine for cleaning, i, 81; preparation, varieties, &c., ii, 124; sources of supply, ii, 21; weights, ii, 142.
Curry-powder and Pastes, ii, 198.
Custom Duties and Excise Regulations—coffee and chicory, ii, 72; goods subject to, iv, 255; sale of goods terms, i, 158; sugars, ii, 151; tobacco, iv, 24, 210; wines and spirits, &c., iv, 67, 147, 148, 167.
Customers—
 Cash v. credit, i, 99-101.
 Coffee-making instructions, ii, 85-87.
 Old customers of business bought—law and policy as to serving of, i, 52, 98, 99, 104, 105. [&c., i, 179]
 Passbook and card index for orders,
 Personal relationship as between proprietor and customer, iv, 7, 8.
 Samples presented to, i, 195.
 Serving of—assistants' policy in, i, 129, 130, 131, 133, 134, 194; character study, i, 187-190; children and servants, i, 193, 194; cutting down prices and misrepresentation of articles, i, 190, 191.
 Soliciting orders, new business, and new customers, i, 183, 184, 185.
 Tea-blending to suit tastes of, ii, 47.
 Tea room for, i, 70. [48, 52]

Customers' Ledger, i, 227, 228.
Customers' Order File, i, 225, 226.
Cylinder Oils, iv, 68.

D

Dairy Produce and Dairying—
British colonies—state aid, iii, 9-11.
Co-operative principle and state aid
in Denmark and elsewhere, iii, 7,
8, 10, 11, 12, 24, 25, 26.
Russian and Siberian dairying, iii,
3, 8, 9, 12, 33-35.
[See also titles Cream, Eggs, Milk.]
Damage to Property, i, 139.
Damaged Goods, i, 163.
Damp and storage of goods, i, 165, 171.
Danish Bacon—curing, iii, 103;
cutting, description, &c., iii, 113,
114, 240; pig-breeding for, iii, 97,
98; supply and quality, iii, 13;
weights and sizes, iii, 108.
Danish Butter—dairying and factory
methods, iii, 7, 8, 11, 12, 20, 24-26;
varieties, marks, weights, and
prices, iii, 27, 28, 30, 31, 243.
Danish Eggs—quotations and col-
lecting, iii, 128, 130; quality,
season, &c., for, iii, 243, 244, 247.
Danish Lard, iii, 66, 69.
Dari or Durra, ii, 107.
Darjeeling Teas, ii, 29, 30, 49, 50.
Dates—culture, varieties, choosing,
ii, 124, 125-127; weights, ii, 142.
Debt-collecting, i, 178; iv, 250.
Demerara Sugar—application of
term, ii, 154; imitation and sale
precautions, ii, 153, 154, 155, 156;
iii, 263, 264.
Dendang—sun-dried meat, iii, 176.
Department Stores—
American type, i, 44, 45.
Cash and deposit order systems, i,
101, 102; iv, 11.
Classification of goods, iv, 6, 7.
Development abroad, i, 35-38.
Provincial store—description, posi-
tion, fittings, &c., iv, 7-9, 10, 11, 12.
Shop system and routine, i, 174.
Staff, i, 121, 123.
**Departments for Miscellaneous
Goods**—
Classification and routine in great
stores, iv, 6, 7; in ordinary shop,
iv, 12.
Drug and medicine department, iv.
Evolution of grocery business, iv, 2-4.
Fresh provision department, iv, 6.
Licenses and other sanctions for
starting (see Licenses).
Lists of new foods, weekly price lists,
&c., iv, 3, 7, 11. [iv, 28, 29.
Ollman's trade—modern business,
Provincial department store, iv, 7-9,
10, 11, 12.
Sell everything principle, iv, 1, 5.
Stock-taking balance sheet, iv, 264.
Tea rooms and restaurants, iv, 4, 7.
Deposit Accounts, i, 102; iv, 11.
Derby Cheeses, iii, 70, 71, 79, 81,
93, 242. [246.]
Description—sale of goods by, iv.
Desiccated Milk, iii, 156.
Desiccated Soups, iii, 213-215, 216.
Devonshire Cream, iii, 21, 164, 165.
Dextrine, ii, 119; iv, 118.
Dextrose, ii, 157, 158.
Diary for book-keeping, i, 249.
Diastase Compound, ii, 101; iv, 146.

Digby Chicks, iii, 186.
Dika Butter, iii, 61. [203.]
Disinfectants—sale regulations, iv,
Disinfecting Soaps, iv, 93, 94.
Distemper Wash for walls, &c., iv,
117. [118.]
Distillers' Premises—excise regu-
lation, iv, 167.
Dorset Cheese, iii, 79. [60, 170.]
Drainage, &c., of shop premises, i.
Drawers for shop-fittings, i, 69, 70,
71; for dry goods, i, 170, 178, 179.
Dressed Provisions, iii, 171.
Dried or Evaporated Fruits—
Articles classed as, ii, 120, 127.
Candied peel, ii, 139, 140.
Crystallized and other fancy sugared
fruits, ii, 140, 141. [128, 129.]
Drying and cooling processes, ii.
Evaporated fruits, ii, 127, 129, 130.
Sources of supply and demand, ii, 21.
Wholesale terms and weights, i, 157;
ii, 142.
[See also titles of Fruits.]
Dried Herbs, iii, 224.
Dried Vegetables, iii, 222-224.
Driving Power for machinery, i,
83-85.
Drugs, Medicines, &c.—
Affections not considered ailments,
iv, 198.
Ailment and compound names—sale
of medicines as remedies for ail-
ments, iv, 201, 202. [200, 201.]
Broken boxes and entire drugs, iv.
Classification of drugs sold under
different conditions, iv, 194.
Disinfectants, preservatives, sheep
dips, &c., iv, 203.
Establishment of department for sale
of, iv, 10, 196.
Exemptions from duty or stamp, iv,
197, 198; list of exempted drugs,
&c., iv, 199, 200.
License to sell, iv, 16. [106.]
Medicine Stamp Duty Acts, iv, 194.
Non-dutiable titles for various mix-
tures, &c., iv, 202.
Patent medicine sale, and duty ex-
emptions, iv, 196, 197, 201.
Poisons, iv, 194-196, 203.
Sale of Food and Drugs Act—ad-
ministration, &c., iv, 228-231.
Sale without license—list of drugs
and preparations allowed, iv, 202.
Simple drugs—stocking, proper
strength and nature, iv, 203.
Warranted genuine, requirements of
B.P., iii, 264.
Dry Goods—storage, i, 170, 171.
**Drying, Non-Drying, and Slow-
Drying Oils**, iv, 43, 44, 51.
Dubbing—paste, iv, 125.
Ducks and Ducklings—breeding,
feeding, &c., iii, 208, 209; frozen
and fresh, iii, 203, 204, 205, 206.
Dunlop Cheese, iii, 70, 71, 79.
Dunmow Flitch, iii, 121.
Dutch Bacon and Ham, iii, 108.
Dutch Butter—composition, alleged
adulteration, &c., iii, 48, 49, 57, 58.
Dutch Cheese, iii, 76, 81, 92, 93.
Dutch Cocoas, ii, 91.
Dutch Margarine, iii, 57.
Dwelling-house—conversion into
shop, iv, 13.
Dyed Sugars—law on, and detecting,
ii, 153, 154, 155, 156.
Dyes for dyeing, and in food, &c.,
iv, 110, 130-132.

E

Earths and Stones—bath-brick,
fullers' earth, &c., iv, 121-124.
East Indian Coffees, ii, 65, 66, 76.
Eating Oils, iv, 51, 52, 63 (see also
Salad Oils).
Edam Cheese, iii, 70, 71, 79, 92.
Edinburgh Old Shop, i, 23.
Eggs— [tion, iii, 139.]
Air-exclusion methods of preserva-
tion, iii, 138.
Canning in bulk, iii, 138.
Cheap eggs imported—table of de-
clared value, iii, 122. [126-129.]
Classification and rules for market, iii.
Cold storage, iii, 134, 135, 136-139.
Compressed, iii, 223. [231, 244.]
Counting eggs in cases, iii, 134.
Fixing prices and number for retail-
ing, grading, &c., iii, 144-146.
Flavour and weights of eggs—con-
ditions affecting, iii, 124, 125.
Foreign eggs, iii, 128-131.
Fowl-breeding, and productivity of
different breeds, &c., iii, 123-126.
Home v. foreign supply, iii, 122, 123.
Irish eggs, iii, 129, 130. [271.]
Leakage system in company shops, i.
New-laid eggs, iii, 122, 123, 243.
Preserving methods, iii, 134, 139-144.
Sources of supply, iii, 16, 17, 128-131.
Tests for freshness—"candling" and
other processes, iii, 131-134, 144.
Vessels for storage, iii, 141, 142.
Wholesale market in London, iv, 257.
Egyptian Wheat, ii, 7.
Electric Lighting of Shops, i, 89,
91; iv, 33, 209.
Electric Motors for driving ma-
chinery, i, 83, 84.
Embezzlement of agents, &c., iv, 245.
Emery and emery preparations, iv,
123, 124.
Emmenthaler Cheese, iii, 70, 71, 81.
Employment of Children Act,
1903—provisions, iv, 243.
Empties—bottles, cleansing and col-
lection, iv, 191-193; credit, &c.,
to customers, i, 183; petroleum
empties, use of, iv, 32, 33; sale of
goods conditions, i, 157, 158; stock
empties and wholesale packages,
i, 166, 167, 183, 257.
Enamel Paints, iv, 115. [85.]
Engines for driving machinery, i, 84.
English Acreage for crops, ii, 3, 4, 8.
English Bacon and Ham, iii, 107,
108.
English Lards, iii, 66, 67, 68, 69.
English Oatmeal, ii, 102.
English Soy for sauces, ii, 195.
Enquiry Office for adjustment of
mistakes, &c., i, 195.
Eppe's Cocoa—composition, ii, 92.
Erbswurst Sausage, iii, 174.
Essential Oils and by-products, iv,
43, 71-74.
Ethers in Spirits, iv, 160.
Eucalyptus Oil, iv, 73.
European Wheat, ii, 5-7.
Evaporated Fruits (see Dried
Fruits).
Evolution of the Grocery Trade—
Ancient trading, i, 9-11.
Co-operative stores and companies—
influence of, i, 23.
Comers and Trusts, i, 14.

Evolution of the Grocery Trade—

(Cont.)

- Description of trades included in grocery business, i, 22.
- Early English shops, i, 11-13, 18, 19, 23, 24, 29.
- Goods sold by the grocer, i, 21, 22.
- Grocer—origin and definitions of term, i, 9, 13, 21. [title].
- Grocer companies and guilds (see that Progress of trade, i, 20, 21).
- Statistics, &c., on number of grocers and divisions of the trade, i, 21-23.
- Training of grocers, i, 15, 16.
- Excise Duties** (see title Custom Duties and Excise Regulations).
- Exhibitions of Grocery**, i, 66, 67: stock purchases from, i, 144.
- Expenses Book**, iv, 264, 265.
- Expenses of a business—calculations**, iv, 12, 260.
- Exploration Expeditions—canned goods for**, iii, 3, 4.
- Extract of Milk**, iii, 156. [tracts].
- Extracts of Meat** (see Meat Ex-

F

- Factory Act**, iv, 243, 245.
- Factory Gouda Cheese**, iii, 81.
- Factory or Warehouse—grocer's premises described as**, iv, 244, 245.
- Family Fathers organization of grocers in Paris**, i, 117.
- Fancy Bread**, ii, 228.
- Fancy Dried Fruits**, ii, 140, 141.
- Fancy Soaps**, iv, 90-93.
- Far East—typical shops**, i, 39.
- Farina**, ii, 119.
- Farinaceous Foodstuffs—**
 - Group consisting of purified starches, &c., ii, 100.
 - Group containing nitrogenous and other compounds, ii, 116.
 - Miscellaneous prepared foods for infants, invalids, &c., ii, 117.
 - Preparation, &c., of cassava bread, ii, 114, 115; lentil flour, revalenta, and pea-meal, ii, 116, 117.
 - Weights, ii, 115, 116.
 - [See also titles Arrowroot, Corn-flour, Sago, Tapioca.]
- Farinha**, ii, 114.
- Fecula**, ii, 119. [220.]
- Fertilizers—sale provisions, &c.**, iv, Fez Dates, ii, 126, 127. [102.]
- Fibre v. Bristle for brushes**, iv, 101.
- Fidelity Guarantee**, i, 127-129.
- Figs—culture, curing and packing**, ii, 130, 131; crystallized, &c., fruit, ii, 141; sources of supply and varieties, ii, 21, 132; weights, ii, 142.
- Fire on Premises—law of landlord and tenant**, i, 63; precautions, i, 174; iv, 33.
- Fire-lighters**, iv, 140. [157.]
- Fire Risks—sale of goods terms**, i.
- Fireworks—license for sale**, iv, 18.
- First-class Shops**, i, 28, 29, 31.
- Fish—cold storage**, iii, 231, 232; fresh, shell, and dried, iii, 15, 16, 204, 205; tinned (see title Tinned Goods).
- Fish Glue**, iv, 136.
- Fish Oils**, iv, 42, 44, 48, 49.
- Fishes' Roe**, iii, 189-191.
- Fishing—salt**, ii, 192, 194.
- Fitting of Shops** (see title Planning and Fitting of Shops).

- Fixed Oils**, iv, 43.
- Fixtures, Shop**, i, 62, 63.
- Flake Cocoa**, ii, 90.
- Flanders Bricks**, iv, 122.
- Flour Polishes, Pastes, &c.**, iv, 129.
- Flour—alum in**, ii, 227, 229; analyses, ii, 108, 109; bread brands and yield of loaves, ii, 223; biscuit flours, ii, 231; self-raising flour, ii, 226; strength and colour determination, and tests, ii, 97, 98, 223; weights, ii, 107 (see also Wheat and Wheat-flour).
- Flower Seeds**, iv, 218, 219. [Flour].
- Flowers—oils from**, iv, 72.
- Foie Gras**, iii, 188, 189.
- Fondants**, ii, 242, 246. [228.]
- Food—definition under Food Law**, iv.
- Food and Drugs Acts** (see title Sale of Food and Drugs Acts).
- Food Laws—**
 - Acts concerning retail grocer, iv, 224.
 - Ancient and modern offenders—adulteration practised, iv, 221, 222.
 - Coffee and tea, iv, 224-227.
 - Defence of retailer on receipt of summons, iv, 236-238; false warranties, and responsibility of assistants, iv, 239-241. [tions, iv, 227, 228.]
 - Imported foods—fines and regulation—Margarine Act, 1887, iv, 230-232.
 - Merchandise Marks Act, 1887, iv, 241, 242. [closure, iv, 232-234.]
 - Protection by label, notice or disclaimer.
 - Responsibility of retailer v. manufacturer, iv, 222. [title].
 - Sale of Food and Drugs Acts (see that Sampling of goods—local authorities' power, iv, 223; penalties for refusing to sell samples, &c., iv, 234-236.)
- Food Standards—**
 - American standards and definitions, iii, 250-255, 256.
 - Appointment of Commission on arsenic poisoning, &c., iii, 247-249.
 - British standards fixed or partially fixed, iii, 249, 250.
 - Establishment of official food standards, and court of reference—recommendation, iii, 248, 249.
- Food-stuffs and Food Supply—**
 - Cattle-foods—sale and warranty, iv, Cereals (see that title). [220.]
 - Cold storage, iii, 231-233.
 - Colouring matters used, iv, 130-132.
 - Distribution of food—grocery trade importance, i, 2, 3, 13, 14; demand for trained distributors, i, 4, 5.
 - Early days of trade, i, 10, 11.
 - Farinaceous foodstuffs (see that title).
 - Hand-to-mouth modern practice, and effect of war, &c., iii, 17, 18.
 - New plants in Yucatan, ii, 104, 105.
 - Preserving principles, ii, 198, 199.
 - Public education in, iv, 4.
 - Seasons—monthly list, iii, 245, 246; wholesale supplies, iv, 258.
 - Stamp-duty exemptions and regulations, iv, 107, 108.
 - [See also Sources of Supply.]
- Foreign Cheese**, iii, 70, 71.
- Foreign Eggs—cold storage**, iii, 138; home v. foreign trade, iii, 122, 123; market quotations, packing, collecting, and sources, iii, 128-131.
- Formaline in milk and cream**, iii, 155, 165, 191. [53.]
- Formosa Oolong Tea**, ii, 35-37, 50.
- Fossil Wax**, iv, 84.
- Fowls—feeding, &c.**, iii, 207, 208; frozen and fresh, iii, 203, 204.
- Frankfort Sausage**, iii, 173.

- French Beans**, ii, 213, 217.
- French Butter**, iii, 12, 29.
- French Capers**, ii, 170, 171.
- French Chalk**, iv, 123.
- French Cheeses**, iii, 76, 82.
- French Chocolate**, ii, 93.
- French Coffee**, ii, 72, 78, 79, 83.
- French Egg Trade**, iii, 128.
- French Grocers' Syndicate**, i, 118.
- French Margarine**, iii, 56, 58, 59.
- French Plums and Prunes** (see title Plums and Prunes).
- French Sardines**, iii, 182, 184.
- French Shops and Methods—**
 - assistants, i, 17, 118; book-keeping, i, 222; typical shops, pedlars, &c., i, 35, 36.
- Fresh Provision Department**, iv, 6.
- Frozen and Chilled Meat—**
 - Aberdeen pork-pickling, iii, 193.
 - Buying, iii, 202, 203.
 - Cooking odd joints, ii, 203.
 - Cuts for pork, iii, 201.
 - Development of trade, and sale in grocery shops, iii, 193, 194.
 - Difference between "frozen" and "chilled" meat, iii, 194, 195.
 - Inspection in U.S.A., iii, 198, 201.
 - Meat-packing and by-products, iii, 3, 15, 195, 196, 199.
- Retail shops—management, &c.**, iii, 201, 202. [iii, 195-199.]
- Slaughtering centres and methods**.
- Sources of supply**, iii, 3, 15, 194.
- Weights and packing**, iii, 200, 201.
- Frozen Milk**, iii, 156. [204.]
- Frozen Poultry and Game**, iii, 203.
- Frozen Rabbits and Hares**, iii, 203.
- Fruit-cleaning machines**, i, 82, 83, 173.
- Fruit Departments—arrangement and working**, i, 26, 33, 45; iv, 9.
- Fruit Essences**, ii, 240.
- Fruit Jellies**, ii, 209, 210.
- Fruit Juices**, ii, 204, 262.
- Fruit Pulp**, ii, 204.
- Fruit Salad**, ii, 253.
- Fruit Syrups**, ii, 164, 165, 204.
- Fruits—**
 - Classification of products, ii, 248.
 - Cold storage, i, 79; ii, 248; iii, 231, 232, 233. [ling, ii, 267.]
 - Soft fruits—classification and handling.
 - South African fruits, ii, 267.
 - Wholesale markets in London, and new seasons for, iv, 257, 258.
 - [See also titles Dried or Evaporated Fruits, Preserves, Tinned Goods.]
- Fullers' Earth**, iv, 123.
- Fulling Soap**, iv, 94.
- Furniture Polishes and Pastes**, iv, 128, 129.

G

- Game—close time and licenses**, iv, 15; cold storage, iii, 229, 231, 233; frozen and fresh, iii, 203-205; retail prices and buying, iii, 204, 205; tinned game, iii, 171, 172; various birds and sources of supply, iii, 209, 210.
- Game-dealer's License**, iv, 15.
- Gas and Fittings**, i, 72, 73, 74, 75; lamps, i, 90; meters, &c., i, 93-95.
- Gasoline Oil**, iv, 70.
- Geese—fattening for livers**, iii, 188, 189; frozen and fresh, iii, 203, 204; preparation for market and sources of supply, iii, 206, 207.

Genoa Cakes, ii, 238.
 Germ Bread, ii, 227, 228.
 German Beers, iv, 180.
 German Eggs, iii, 130.
 German Margarine, iii, 51, 58, 59.
 German Prunes, ii, 136.
 German Sausages, iii, 173, 174.
 German Shops and store law, i, 36-38.
 German Treacle, ii, 163.
 German Yeast, ii, 222.
 Gervais Cheese, iii, 70, 88, 93.
 Ghee Butter, iii, 61. [220.
 Gherkins—pickled, ii, 217, 218, 219,
 Gilds (see Grocery Companies and
 Gin, iv, 161, 162, 169. [Gilds).
 Ginger, ii, 22, 173-175; iii, 257, 263;
 American standards, iii, 254; pre-
 served and other forms, ii, 174;
 weights, ii, 178.
 Ginger-ale and Beer, iv, 187, 188.
 Gingerbread Biscuits, &c., ii, 232,
 Ginger Essential Oil, ii, 175. [233.
 Gislser Cheese, iii, 70.
 Glacé Fruits, ii, 140, 141, 174.
 Glarner Cheese, iii, 70, 71.
 Glasgow Grocer Company, i, 20.
 Glasgow Shops, i, 33, 142.
 Glass—opaque and frosting, iv, 117.
 Glass-cases, i, 67, 68.
 Glass Cement, iv, 138, 139.
 Glass Dishes, &c., iv, 217.
 Glass-paper and Cloth, iv, 124.
 Glass Shutters, i, 212.
 Gloucester Cheese, iii, 70, 71, 80,
 242; analysis and weights, iii, 92, 93.
 Glucose—American definition and
 standards, iii, 252; beer brewing,
 &c., iv, 179, 181; honey adultera-
 tion, ii, 20; sources of supply, ii,
 21 (see also Sugars).
 Glucose Vinegar, ii, 216.
 Glue, iv, 134-138.
 Glue Brushes—treatment, iv, 105.
 Gluten Bread, ii, 227.
 Gluten in Flour, ii, 96, 97.
 Glycerides, iii, 42; iv, 74, 86.
 Glycerine Soaps, iv, 92.
 Gombo, ii, 73.
 Goods sold by Grocers—
 Development of business—goods for,
 iv, 2, 3, 6, 9, 10.
 Early and modern trade and classi-
 fications, i, 14, 15, 21, 22.
 Goods "Wanted"—notifications, i,
 130, 147, 148, 258.
 Good-will of a business—purchase,
 i, 50-52, 54, 61; legal description
 and infringements, i, 51, 52.
 Gorgonzola Cheese, iii, 70, 71, 80,
 242.
 Gouda Cheeses, iii, 70, 79, 81, 89.
 Gournay Cheese, iii, 70.
 Granulated Cocoa, ii, 92.
 Granulated Sugars, ii, 146, 149.
 Grape-Fruit, ii, 264.
 Grape Sugars (see Sugars).
 Grapes, ii, 254, 255; cold storage, iii,
 232, 233.
 Greek Currants, ii, 123, 124.
 Greek Figs, ii, 132.
 Greenland Oils, iv, 45, 47.
 Green Paints, iv, 109.
 Green Pea Soup, iii, 211.
 Green Peas—canned, iii, 218-221.
 Green Syrup, ii, 145, 163.
 Green Teas, ii, 24, 30, 31, 32-34.
 Groats, ii, 103, 107.

Grocer—origin and definitions of term,
 i, 9, 13, 21.
 Grocer Companies and Gilds—
 Glasgow company, i, 20.
 Institution of gilds, and trades under
 ancient gilds, i, 12, 13.
 London company—origin and his-
 tory, i, 12-14, 20. [i, 14-18.
 Duties, public appointments, &c.,
 Training of grocers, i, 15, 16.
 Surrender of charters to Charles II,
 &c., i, 21, 22. [Grocers.]
 [See also title Associations for
 Grocers—number, statistics, &c., i, 21.
 Grocers' Hall, London, i, 18.
 Grocers' Itch, ii, 156.
 Grocery Departments—average
 gross profit, &c., iv, 262; branch
 shop, i, 260, 261, 263, 264; pro-
 vincial store, iv, 9.
 Grocery Trade, i, 2-6. (See also titles
 Evolution of the Grocery Trade,
 Learning the Trade).
 Grosser—definitions of, i, 9, 21.
 Grouse, iii, 209; shooting and licenses,
 iv, 15; tinned, iii, 171.
 Gruyere Cheese, iii, 70, 71, 75, 81, 92.
 Guatemala Coffee, ii, 66, 67.
 Guava Fruit, ii, 267.
 Guava Jelly, ii, 210.
 Guayaquil Cocoa, ii, 88, 89.
 Gums and Gum-resins, iv, 118.
 Gunpowder, &c.,—license, iv, 18, 19.
 Gunpowder Tea, ii, 33.

H

Hair Brushes—making, iv, 102.
 Ham (see title Bacon and Ham).
 Ham-and-Tongue Paste, iii, 187, 188.
 Hardware—stock, &c., in, iv, 218.
 Haricots Flageolets and Verts, iii,
 Harness Paste, iv, 125. [220.
 Havana Cigars, iv, 212, 213, 214.
 Hawker's License, i, 218, 221; iv, 14.
 Hearth Stones, iv, 122.
 Heating of shops, i, 75; iv, 10.
 Herbs—dried, iii, 224.
 Herring Oil, iv, 49, 76.
 Herrings—tinned, iii, 185, 186.
 Hersey Process for sugar, ii, 145, 146.
 Highland Coffee, ii, 61, 62.
 Hocks, iv, 155. [14, 64.
 Hog-packing, &c., in America, iii,
 Holidays for staff, i, 116, 117, 136.
 Hollands, iv, 162.
 Home and Colonial Stores, Ltd.—
 shops owned by, i, 23.
 Homœopathic Cocoa, ii, 92.
 Honey, ii, 159, 160, 161; sources of
 supply and markets, ii, 19-21.
 Honey Soap, iv, 92.
 Hop-ale, iv, 188.
 Hopkos, iv, 190.
 Horse and Stable—
 Buying a horse, iii, 267-269.
 Construction and sanitation of a
 stable, iii, 265. [270, 271, 272.
 Diseases, ailments, and remedies, iii,
 Expenses for upkeep, i, 219, 220.
 Feeding a horse, iii, 265-267.
 Management of horse, iii, 271, 272.
 [See also title Vans.]
 Horsefoot Oil, iv, 50.
 Horse Radish—American definition
 and standards, iii, 254.

Hotch-Potch Soup, iii, 212.
 Hot-cross Buns, ii, 239.
 Hot-weather Drinks, iv, 188.
 Hours of Business, &c., i, 36, 117,
 265, 266. (See also title Assistants.)
 Household Soaps, iv, 88-90.
 Hovis Bread, ii, 228.
 Hungarian Wines, iv, 158.
 Hydrated Soaps, iv, 90.
 Hyson Green Tea, ii, 33.

I

Iceland-Moss Cocoa, ii, 92.
 Ice-making machines and boxes, iii,
 229, 230.
 Ices and Ice-creams, ii, 246, 247.
 Icing for cakes, ii, 239.
 Icing Sugar, ii, 146.
 Imperial Tea, ii, 33.
 Imports—
 Breadstuffs, ii, 2, 3.
 Classification of articles, ii, 2.
 Eggs—table of value, iii, 122.
 Laws as to adulteration, fines, &c.,
 iv, 227, 228. [4, 5.
 Statistics, substances and values, iii,
 Wholesale markets and bonded
 warehouses, iv, 255.
 [See also Sources of Supply.]
 Increase of Business—factors in-
 fluencing, &c., i, 104, 141, 181, 182.
 India-rubber Articles—mending,
 Indian Coffee, ii, 15. [iv, 139.
 Indian Corn (see Maize).
 Indian Rice, ii, 105, 106.
 Indian Sugar, ii, 19.
 Indian Teas—blending, &c., ii, 44,
 50; characteristics, varieties, and
 keeping, ii, 29, 30, 57; culture and
 seasons, ii, 24, 25, 26-29, 50, 51;
 infusion, ii, 49, 59; supply and
 consumption, ii, 10, 12.
 Indian Wheat, ii, 7, 8.
 Industrial Soaps, iv, 94.
 Infants' Prepared Foods, ii, 117.
 Inks and Ink-powders, iv, 109,
 132-134. [139.
 Inspectors of grocery shops, i, 138,
 Institute of Grocery and Provisions—
 proposed establishment, i, 4.
 Insurance—accident compensation,
 iv, 245; benefits to members of gro-
 cers' associations, iv, 272; fidelity
 guarantee for staff, i, 127-129.
 Intoxicating Liquors—sale license
 and regulations, iv, 19, 21, 24.
 Invalids' Prepared Foods, ii, 117.
 Invert Sugar, ii, 147, 148, 157, 158,
 159, 161.
 Invoice Guard Book, i, 225, 226.
 Invoices— [215, 256; iv, 10.
 Checking and filing, i, 148, 180, 214,
 Forms and terms stated in, i, 155,
 156, 160; iv, 268.
 Warrants from merchants, &c., iii,
 257; iv, 220, 238.
 Iodine Soap, iv, 93.
 Irish Acreage for crops, ii, 3, 4.
 Irish Bacon and Ham, iii, 103, 104,
 240; breeding pigs for, iii, 96;
 weights and sizes, iii, 108.
 Irish Butter—home supplies and
 transport, iii, 4, 5-7, 11; making,
 creamery systems, and extent of
 trade, iii, 6, 7, 19, 24, 25, 29;
 weights, marks, prices, and char-
 acteristics, iii, 27, 28, 243.

Irish Eggs, iii, 128, 129, 130, 243.
 Irish Grocer's Spirit License, iv.
 Irish Lard, iii, 67, 69. [21.
 Irish Provisions—supply to Great Britain, iii, 4, 5-7.
 Iron Paints, iv, 113, 114.
 Iron Preservative, iv, 127.
 Ironmongery—stock, &c., iv, 218.
 Isinglass, iv, 136; use in beer fining, iv, 173, 182.
 Italian Goods—storage, i, 164; window-dressing, i, 199.
 Italian Paste, ii, 99.
 Italian Prunes, ii, 136.
 Italian Sausage, iii, 173.
 Italian Warehouseman—definition and trade of, i, 22.
 Italian Wines, iv, 152, 158, 159.

J

Jaggery, ii, 143, 144, 149.
 Jamaica Bananas, ii, 252.
 Jamaica Coffees, ii, 62, 65, 66, 67; blends for, ii, 77.
 Jamaica Pepper, ii, 167, 184.
 Jamaica Sugar—analysis, ii, 155.
 Jams—adulteration and detection, ii, 207, 208; description, manufacture, and recipes, ii, 205, 206; Jewish preparation, ii, 137; keeping mould from, ii, 206.
 Japan Teas, ii, 32, 34, 38.
 Japan Wax, iv, 82.
 Japanese Gelatine, ii, 205, 210.
 Japanese Oils, iv, 46, 62.
 Java Coffee, ii, 65, 67.
 Java Rice, ii, 106.
 Jellies—Fruit and Table, &c.—
 Classification, and substances used, ii, 208, 209.
 Compound jellies, ii, 210, 211.
 Fruit jellies, ii, 209, 210.
 Juices for—preparation, ii, 204.
 Table jellies, ii, 211, 212.
 Jerked Beef, iii, 175.
 Juices—fruit, ii, 204 (see also Lime-juice, Lemon Juice, &c.).
 Jujubes, ii, 243, 244.
 Julienne Soup, iii, 212, 215, 224.

K

Kaffir Store, i, 41.
 Kerosene Oils (see Petroleum).
 Ketchup, ii, 196, 197.
 Kiel Butter, iii, 28.
 King's Beam—Grocer Company custody of, i, 13, 14.
 Kirschwasser, iv, 165.
 Kokum Butter, iii, 61.
 Kümmel, iv, 165.

L

Labels—affixing to tin, iv, 139; consignments of stock, i, 165; food laws and protection of retailer, iv, 232-234; own and proprietary goods, i, 102, 103, 216; iv, 207.
 Labrador Tea, ii, 43.
 Lactose, ii, 152, 153.
 Lamb, iii, 174, 202, 203.
 Lambs' Tongues, iii, 170.

Lamp-black, iv, 107. [17, 18.
 Lamp Oils, iv, 67, 69; flash-point, iv.
 Lamps, Oil—care and use, iv, 39, 40; construction, containers, burners, and wicks, iv, 35-39.
 Lancashire Cheese, iii, 82.
 Landlord and Tenant—lease, fixtures, fire risks, &c., i, 62, 63; premises in competition, i, 21; repairs to premises, end of tenancy, and distraint for rent, i, 63-65, 77.
 Larceny Act, 1901, iv, 245.
 Lard—
 [against, iii, 257.
 Adulteration, iii, 68, 69; warranty
 American kinds, iii, 64-66; definition and standards, iii, 250.
 Composition, storage, and tests for copper in, iii, 62, 66, 67, 243.
 Compound or refined lard, iii, 65, 66.
 Home-produced and Danish lard, iii, 65, 243.
 Melting-point and specific gravity, Rendering, &c., processes, iii, 63, 64.
 Sources of supply, iii, 14, 15.
 Weights and quotations, iii, 69.
 Lard Oil, iii, 66, 67; iv, 49; specific gravity, iv, 76; use for adulteration of olive oil, iv, 57; weights, iv, 42.
 Laundry Requisites, ii, 118; iv, 128, 141, 142 (see also Soaps).
 Leakage System in company shops, i, 270-272.
 Learning the Trade—
 [i, 1, 2.
 Adequate and commercial education, Apprenticeship and Assistants (see those titles).
 Classes for assistants, &c., i, 2.
 Demand for trained food distributors, Early methods, i, 15, 16. [i, 4, 5.
 Importance, science, and status of the grocery trade, i, 2, 3, 4.
 Institute of Grocery and Provisions—proposed, i, 4. [books, i, 5-8.
 Practical training, and the use of
 Lease of Shop, &c. (see Landlord and Tenant).
 Leather—polishing materials, iv, 124-126; restoration of, iv, 214.
 Leavened Bread, ii, 223.
 Leblanc alkali process and soap manufacture, iv, 86.
 Ledgers—"bottle" ledger, iv, 192; bought ledger, i, 226, 227; branch shops, i, 259; customers, i, 227, 228; entering up credits in, i, 256; private books, i, 230-233, 234, 235.
 Legal Advice—benefit of grocers' association membership, iv, 271.
 Leicester Cheese, iii, 70, 71, 83, 242.
 Leicester Sauce, ii, 195.
 Lemon Juice, iv, 187; prevention of decomposition, ii, 257.
 Lemon Oil, ii, 257.
 Lemon Squash, iv, 189, 190; protection against adulteration, iii, 263.
 Lemon Syrups, ii, 165.
 Lemon Tea and Barley, iv, 190.
 Lemon Water Ice, ii, 247.
 Lemonades—recipes, ii, 258; iv, 187, 189, 257, 258. [189, 190.
 Lentil-Flour, ii, 116.
 Letters—assistants and situations, i, 120, 122. [fixing, i, 212.
 Letters on Windows—cement for
 Leven for bread, ii, 222.
 Levulose Sugar, ii, 157, 158.
 Liberian Coffee, ii, 61, 62, 63.

Licenses—

Applications, grants, renewals, and hours of selling liquors, &c., iv, 21-23.
 Bake-house regulations, iv, 24, 25.
 French grocers' grievances, i, 35.
 German laws and customs, i, 36, 37.
 Grocer, tea dealer, and provision merchant trade—no license but some sanction required, iv, 13.
 List, &c., of licenses, iv, 13-21, 24.
 Notes and queries from *The Grocer*, iv, 25-27.
 Off licenses, iv, 19, 22, 23.
 Orders for beer, &c., and sale of liquors to children, iv, 23, 24. [13.
 Royal arms—authorized use of, iv, Scottish customs and licenses as distinct from English, i, 33; iv, 20, 21, 23. [name of product.]
 [For special license, see its title, or
 Lie Tea, ii, 37.
 Liebig Meat Extract, iii, 176-178.
 Lighting of Shops—
 Acetylene for, i, 91-93.
 Brilliant light an advertisement, and remedy for dark appearance, i, 65, 66, 67, 89, 90.
 Electric light, i, 89-91; iv, 10, 33, 209.
 Fitting on various sums, i, 74, 75.
 Gas and fittings (see that title).
 Oil store, iv, 33.
 Tobacco, &c., department, iv, 209.
 Window-dressing, i, 201, 202.
 Limburger Cheese, iii, 83.
 Lime Juice—concentrated, ii, 262; cordial, iv, 187; protection from adulteration, iii, 263.
 Lime Water for preserving eggs, iii, 139, 140, 143.
 Limes, ii, 261, 262.
 Linen Glazes, Glosses, &c., iv, 128.
 Linseed, Crushed—warranty against adulteration, iii, 263. [iv, 42.
 Linseed Oil, iv, 60, 61, 76; weights,
 Lipton's, Ltd.—influence on grocery trade, i, 23.
 Liqueurs—licenses, making, kinds, iv, 21, 164-166; palm-wine, ii, 125.
 Liqueurs—sweets, ii, 244.
 Litmus, iv, 131.
 Livarot Cheese, iii, 70.
 Liver Oils, iv, 45, 46.
 Liverpool Conditions of sale of goods, i, 157.
 Living-in and Living-out Systems for assistants, i, 114-116, 134-138.
 Loaf Cheddar Cheese, iii, 70, 77.
 Loaf Sugars, ii, 145, 155; marks and weights, ii, 149.
 Lobsters—buying, iii, 205; canned and curried, and keeping qualities, iii, 179, 180, 261. [256, 257.
 Logwood, iv, 131. [256, 257.
 London Markets, iii, 127, 128; iv,
 London Shops and Methods—
 Assistants, i, 129-133. [13, 24.
 Early trading, and old shops, i, 12.
 First class shop, i, 28, 29.
 Learning the trade, i, 7.
 Shop system and routine, i, 177, 178.
 Small general shop, i, 27, 28.
 Stock—purchasing, i, 143; reception and storage, i, 163, 164. [68.
 Suburban modern shop, i, 24-27, 67.
 Trade terms and sale conditions, i, 157. [of early trade, i, 1.
 London Street Names—influence

Loquats, ii, 267.
 Lozenges, ii, 240, 241.
 Lubricating Oils—fish and marine oils, iv, 49; mineral oils, iv, 66, 67, 68, 69, 70; vegetable oils, iv, 54, 55, 61; wholesale methods and weights, iv, 40, 41.
 Lubricating uses of tallow, iv, 80.
 Lunch-cake, ii, 237.
 Lunch Tongues, iii, 170.

M

Macaroni, ii, 99, 100.
 Macaroons, ii, 233, 234.
 Mace, ii, 175, 176; American standards, iii, 254; butter of, ii, 177; sources and weights, ii, 23, 178.
 Macédoine of vegetables, iii, 220.
 Machinery (see title Mills, &c.).
 Machinery Oils, iv, 48, 49, 54, 61, 68, 69, 80.
 Mackerel—tinned, iii, 185.
 Madeira Cake, ii, 238.
 Madeira Sauce, ii, 196.
 Madeira Wines, iv, 155, 156.
 Magnesia, Citrate of—sale precautions, iv, 203.
 Mahwa Butter, iii, 61.
 Maize or Indian Corn, ii, 103, 104, 105; sources, ii, 3; tinned, iii, 221; weights, ii, 107.
 Maize Oil, ii, 103; iv, 62, 76; adulteration of olive oil, iv, 56.
 Malaga Figs, ii, 132.
 Malaga Raisins, ii, 137, 138.
 Malmsey Wine, iv, 156.
 Malt Vinegar, ii, 214-216.
 Management of a Shop (see Shop System).
 Managers—engagement and duties, i, 124, 126, 176, 177, 256, 258.
 Manufacturers' Show Cards—display in windows, i, 208.
 Maple Sugar, ii, 143, 150.
 Marshchino, iv, 165.
 Margarine Act, 1887, iii, 57; iv, 230-232; assistants and legal liabilities under, i, 139.
 Margarine or Butterine, &c.—
 Adulterated butter and margarine compounds—sale and prejudice, iii, 57, 58; warranty against adulteration, iii, 257.
 Analysis and distinction from butter, iii, 45-49, 58-60.
 Cold storage, iii, 234.
 Composition and manufacture, iii, 54, 55-57, 59, 60.
 Use of sesame oil and cotton-seed oil—German regulations, &c., iii, 51, 59, 60; iv, 64.
 Description of "artificial butter", and substances sold as margarine, iii, 53, 54, 56, 57, 61; legal description, iv, 230. [iii, 53, 54].
 Discovery and object of preparation, Packing and weights, iii, 60.
 Sale regulations, &c.—Canadian legislation, iii, 255; company shop rules, i, 268, 270; food laws on, iv, 227, 230-232, 235; wholesale dealers, iii, 258, 259.
 Sources of supply, iii, 12, 13.
 Standards for—legislation, iii, 250, 255.
 Margarine or Filled Cheese, iii, 71, 89, 90; sale, iii, 258, 259.

Marine Risks—sale of goods terms, Marmalade, ii, 207. [i, 157].
 Marmite, iii, 179.
 Marsala Wine, iv, 156.
 Maslin, ii, 103.
 Masseccuite from sugar, ii, 144, 148.
 Matches, iv, 99, 140; storage, i, 169.
 Maté "Tea", ii, 42. [173; iv, 33].
 Meat-biscuits, iii, 216.
 Meat Extracts and Essences, iii, 176-179; guarantee against adulteration, iii, 263; weights, iii, 192.
 Meat-packing and by-products, iii, 196, 199, 200.
 Meat Soup-tablets, &c., iii, 213-215.
 Meats— [iii, 250].
 American standards and definitions, Cold storage, iii, 225, 227, 231, 232. [See also titles Frozen and Chilled Meat, Tinned Goods and Potted Meats, &c.]
 Medicated Wines—sale licenses and exemption, iv, 17, 19, 198.
 Medicines (see title Drugs, &c.).
 Melons, ii, 256, 257.
 Merchandise Marks Act, 1887, iv, 241, 242, 248, 260.
 Mercurial Soaps, iv, 93.
 Metal Letters—affixing, iv, 139.
 Metal Polishes, iv, 126-128.
 Metal-silvering Powder, iv, 127.
 Methylated Spirits—production, sale and storage, iv, 18, 33, 166.
 Mice on premises, i, 172. [167].
 Milk—
 Adulteration, iii, 149-152, 154; warranty against, iii, 258.
 Cold storage, iii, 231.
 Colouring matters and preservatives used, iii, 154-156.
 Condensed milk (see that title).
 Constituents and analyses, iii, 147, 148, 151, 162; public analysis, iv, 235.
 Description of frozen, desiccated, extract of, cakes of milk, concentrated milk, &c., iii, 156, 157.
 Food-value and use, iii, 145, 147.
 Imported fresh milk, iii, 156.
 Quality and genuineness—judging, &c., iii, 148, 149, 150, 151. [154].
 Skimmed or separated milk, iii, 153.
 Standards (official)—British and American, iii, 249, 251, 252.
 Testing and machines for, iii, 152.
 Milk and Cocoa, iii, 157.
 Milk Factories for production of butter, iii, 23, 24.
 Milk-powders, iii, 156, 162.
 Milk Sugar, ii, 152, 153.
 Millet, ii, 106.
 Mills and other Machinery—
 Biscuit manufacture, ii, 231, 232.
 Coffee, i, 81-84; ii, 64.
 Currant cleaning, &c., i, 81, 173.
 Shop outfit and driving power, &c., i, 82-85.
 Tea mixers, &c., i, 81, 82, 83; ii, 55.
 Mineral Oils—description of oil-fields, geology and origin of oils, iv, 64-66; flash-point, iv, 70, 71; preparation, &c., of oils, iv, 66-70.
 Mineral Waters—artificial and natural, iv, 186, 187; bottling and collection, &c., of "empties", iv, 191-193; stamp-duty exemption, iv, 197. [264].
 Mixed Goods—sale precautions, iii,

Mixed Pickles, ii, 212, 213, 219.
 Mocha Coffee, ii, 59, 60, 65, 66, 68; Abyssinian coffee sold as, ii, 68; blends for, ii, 77.
 Mogador Oils, iv, 54, 55.
 Moist Sugar, ii, 145. [161, 162].
 Molasses from sugar, ii, 19, 143, 148.
 Monings Teas, ii, 35, 50.
 Mortadella Sausage, iii, 173.
 Moselle Wines, iv, 155.
 Mother of Cloves, ii, 172.
 Motor Van, i, 219, 220.
 Mottled Soaps, iv, 89, 90.
 Mulligatawny Soup, iii, 212.
 Muscatel Raisins, ii, 138.
 Mushroom Ketchup, ii, 197.
 Mushrooms, ii, 270, 271; canned, iii, 220. [46].
 Music in American grocery shops, i, Mustard— [against, iii, 263].
 Adulteration, &c., ii, 190; guarantee American standards, &c., iii, 254.
 Condiments of mustard and compound mustards—mixture and sale of, ii, 186, 188. [188, 189].
 Constituents and analysis, &c., ii, Culture, and introduction of table mustard, ii, 186, 187.
 Leaves, plasters, &c., ii, 189.
 Manufacture, and mixture of black and white mustard, ii, 187.
 Oils of mustard, ii, 187, 188, 189.
 Sources of supply, ii, 23.
 Mutton—buying, iii, 202; essence of, iii, 176; frozen, iii, 15, 194, 195; sun-dried, iii, 176; tinned, iii, 166, 169, 170.
 Mutton Broth—analysis, iii, 213.
 Myrtle Wax, iv, 83.
 Mysore Coffee, ii, 65, 67, 77.

N

Naidoobatum Coffee, ii, 66, 67.
 Naphtha, iv, 66, 67, 70; weights, iv, 41.
 Neatsfoot Oil, iv, 50, 76; weights, Neft-gil, iv, 85. [iv, 42].
 Neigherry Coffee, ii, 66, 67.
 Neufchâtel Cheese, iii, 70, 71, 87, 88, 93.
 New Forest Cheese, iii, 70.
 New Yorktypical shops, &c., i, 45-47.
 New Zealand Butter—official grading, &c., iii, 30-33.
 New Zealand Cheese and Bacon—weights, iii, 93, 108. [195].
 New Zealand Mutton—frozen, iii, New Zealand Shops and Methods, i, 41, 116, 117. [191].
 New Zealand Tinned Meat, iii, Night-lights, iv, 99.
 Non-alcoholic Beverages—articles classed as, iv, 185; preparation, &c., iv, 187-189.
 Notices as to sale of goods—protection of retailer, and law on, iv, 233.
 Nougat, ii, 244.
 Nucoline, iii, 62.
 Nutmeg, ii, 176, 177; American standards, iii, 254; oil and essence of nutmeg, butter of mace, ii, 177; iii, 61; sources and weights, ii, 23, 178 (see also Mace).
 Nutmeg Butter and Oils, ii, 177, Nut Oil, iv, 59. [iii, 61].
 Nuts, ii, 267, 268.

O

Oak Nuts as substitute for coffee, ii.
Oats and Oatmeal— [73.
 Adulterated meal, ii, 102, 103; guarantee against, iii, 263.
 Consumption, preparation, and constituents of oatmeal, ii, 101, 102.
 Culture of oats, ii, 101.
 Sources of supply and weights, ii, 3, 8, 9, 107.
Ochres—paints, iv, 109, 110.
Offices, i, 164, 221, 222; duties for staff, i, 138.
Oilman and his Trade— [30.
 Articles in shop and window, iv, 29.
 Capital for business, &c., i, 48.
 Distinction and evolution of trade, i, 22, 23; iv, 27.
 Lighting a store, iv, 33.
 Modern business—departments, iv, 27-29; fittings for store, i, 73.
 Sale of oil—regulations, iv, 34, 35; licenses, iv, 17-19. [40.
 Stock—choice and inspection, iv, 29.
 Storage of goods, iv, 30-34.
 Wholesale trade, weights and prices, iv, 40-42. [Oils.]
 [See also titles Oilshop Sundries,
Oilman's Licenses, iv, 17-19, 34, 35.
Oil-shales, iv, 64, 65, 69, 70.
Oilshop Sundries—
 Bird-lime, iv, 138.
 Fire-lighters, fuses, &c., iv, 140.
 Glue and size, iv, 134-138.
 Inks and ink-powders, iv, 132-134.
 Isinglass and adulteration, iv, 136.
 Poisons—sale restrictions, iv, 124.
 Preservative for protecting stone, &c., iv, 129. [129.
 Removal of stains, paint, &c., iv,
 Sponges, twine, string, and ropes,
 iv, 143-145.
 [See also titles Cements and Pastes,
 Colours, Earths and Stones, Lau-
 ndry Requisites, Matches, Polishing
Oils— [Materials.]
 Adulteration of olive oil, iv, 55-57.
 Chemistry and testing, iv, 74-76.
 Classification according to origin,
 properties, and uses, iv, 43, 44.
 Colour reactions and acidity, iv, 78.
 Definition, &c., of term "oil", iv, 42.
 Description, extraction, and manu-
 facture—
 Animal oils—from fish and marine
 mammals, iv, 44-49; from land
 animals, iv, 49-51; specific gravi-
 ties, iv, 76.
 Essential oils (volatile oils), iv,
 71-73; turpentine and by-pro-
 ducts, iv, 73, 74.
 Mineral oils—fields, geology and
 origin, iv, 64-66; various oils, iv,
 66-70; flash-point, iv, 70, 71.
 Vegetable oils, v, 51-53; manu-
 facture, &c., iv, 53-64; specific
 gravities, iv, 76.
 Flash-point, question of license, &c.,
 iv, 17, 18, 70, 71.
 Sale and hawking—license and
 regulations, iv, 17-19, 34, 35.
 Saponification, iodine absorption, and
 refractive power, iv, 77, 78. [43.
 Sources and separation processes, iv,
 Specific gravity, iv, 63, 67, 75, 76.
 Stock varieties, iv, 40.
 Storage methods and precautions, iv,
 31-33, 40, 41. [&c., iv, 40, 41.
 Wholesale transport and distribution,
 [For special Oil, see its name.]

Oil-stains—removal, iv, 129.
Oleine Oil, iv, 49.
Oleo Oil, iii, 200.
Olive Oil—adulteration, manufacture,
 varieties, iv, 53, 54-57; buying and
 warranty, iv, 40; chemistry and
 specific gravity, iv, 75, 76.
Olives, ii, 266.
Onions—pickled, ii, 217, 218, 219, 220;
 seasons, sources, varieties, ii, 269,
Oologs Teas, ii, 35. [272.
Opening Day of Shop, i, 105-109.
Orange Pekoe Teas, ii, 31, 35, 37.
Oranges, ii, 259-261; sources and
 seasons, ii, 259, 260.
Order-books, i, 218, 225, 226.
Order Card, iv, 265.
Orders—
 Attention and booking of, i, 179, 180.
 Canvassing (see Soliciting).
 Cash with order system, i, 101, 102.
 Sending out goods (see that title).
Osborne Biscuits, ii, 234.
Own Name Goods and Brands—
 Policy of selling, and art of salesman-
 ship, i, 32, 102, 188, 191, 192, 193.
 Proprietary articles—selling, &c., iv,
 12, 205-207.
 Wines and spirits—selling, iv, 172-
Ox-gall Soap, iv, 94. [174, 175.
Oxidized Oils, iv, 63.
Ox-tail Soup, iii, 212.
Ox Tongues, iii, 170, 192. [iii, 232.
Oysters—buying, iii, 205; cold storage,
Ozokerine and Ozokerite, iv, 84, 85.

P

Packeted Goods—demand and des-
 patching, i, 213. [i, 167.
Packing-cases, &c.—return or sale,
Packing of Goods (see Sending out
 goods).
Paint—removal of, i, 212; iv, 129.
Paint Brushes, iv, 102, 105.
Paints and Colours, &c.—
 American paints, iv, 113-115.
 Coal-tar colours for dyeing, &c., iv,
 110, 111.
 Description of pigments, mixing of
 paints, and use of white lead, &c.,
 iv, 106, 107.
 Gums and gum-resins, and dextrine,
 iv, 118. [iv, 115.
 Mixed, packed, and enamel paints,
 Preparation of paints—black, white,
 blues, and greens, iv, 107-109;
 browns, yellows, ochres, lakes and
 reds, iv, 109, 110; vermilionette,
 Venetian red and Armenian bole,
 iv, 115, 116.
 Preparations for staining wood,
 frosting glass, bronzing, iv, 117.
 Raddle, whitening, and putty, iv,
 116, 117. [tion, i, 209.
 Ticket writing and window decora-
 tions and new colours, iv, 111, 112.
 Varnishes, &c., iv, 118-121.
 Water paints, water glass, and dis-
 temper, iv, 118.
 Wholesale packages, iv, 42. [76.
Palm-nut Oil or palm kernel, iv, 58,
Palm Oil or palm butter, iv, 58, 76.
Palm Sugar, ii, 149.
Palm-wine, ii, 125.
Palmin (see Cocoa-nut Butter).
Palmitin, iv, 81.
Papaya, ii, 265, 266.

Paper and Paper Bags, &c.—
 economy in use, i, 182, 214; ma-
 chine, air-tight and ready-made
 bags, i, 82, 213; iv, 206; storage and
 checking of stock, i, 164, 167, 170;
 weights of bags, and weighing with
 goods, i, 271; iv, 248, 249.
Paraffin Candle, iv, 96.
Paraffin Oil, iv, 66, 67, 70.
Paraffin Scale and Wax, iv, 67,
 70, 83, 84.
Parcels—making up, i, 214, 216.
Parchment Coffee, ii, 64, 65. [118.
Parisian "Family Fathers", i, 117,
Parmesan Cheese, iii, 70, 71, 83.
Partnership—law on, iv, 250.
Partridges, iii, 209, 210; shooting
 and licenses, iv, 15.
Pass-books—customers, i, 179; milk
 and butter sale, iii, 257, 258.
Pastes—affixing articles, iv, 139; pot-
 ted pastes, iii, 187 (see also Polishing
 Materials and Pastes).
Pasteurized Milk, iii, 25.
Pastilles, ii, 243.
Pâté de foie gras, iii, 188, 189.
Pâtés—meat, iii, 188, 189.
Patent Medicines (see title Drugs,
 Medicines, &c.).
Peaches—crystallized, &c., ii, 141;
 evaporated, ii, 127, 129, 130; fresh,
Pea-Meal, ii, 117. [ii, 266.
Pea-nut Oil, iv, 56, 59.
Pea Soup, iii, 211, 216.
Pearl Tea, ii, 33.
Pears—cold storage, iii, 232, 233;
 crystallized, &c., ii, 141; evapo-
 rated, ii, 127-130; fresh, and storage,
 ii, 263; preserved, ii, 201, 203.
Peas, tinned or bottled, iii, 218-221;
 warranties and adulteration, iii, 262.
Pectin in tea and fruit, ii, 39, 40, 209.
Pedlars in France, i, 35, 36.
Pekoe Teas, ii, 31, 32, 35; blending,
 and water for, ii, 49, 50, 53.
Pe-la Wax, iv, 83.
Pemmican, iii, 176.
Peppers—
 Adulteration and colouring, ii, 181,
 182, 183; warranty against, iii, 263,
 American definitions and standards,
 iii, 253, 254. [178.
 Classification as condiments, ii, 166,
 Composition, constituents, and
 analysis, ii, 180, 181, 182.
 Description, preparation, varieties—
 Black and white, ii, 179-181.
 Cayenne, ground, and other pep-
 pers, ii, 182-185.
 Early trading, i, 11. [186.
 Sources of supply and weights, ii, 22,
Pepper Volatile Oil, ii, 181.
Pepperers' Gild, i, 12-14.
Perishable Goods—conveyance, iii,
 2, 3; defects and sale, iii, 260.
Perry, iv, 185; sale license, iv, 21.
Persimmons, ii, 267.
Petroleum Ether, iv, 67.
Petroleum Jelly, iv, 68.
Petroleum Oils and Spirit—
 American, iv, 65, 66-68.
 Classification and definition of oils
 termed petroleum, iv, 17, 18, 31.
 Development of trade, and com-
 mercial fields, iv, 27, 65.
 Flash-point, iv, 17, 18, 31, 70, 71.
 Geology and origin, iv, 64, 65.
 License and sale regulations, i, 218;
 iv, 17, 18, 34, 35.

Petroleum Oils and Spirit (*Cont.*)

- Russian oils, iv, 65, 68, 69.
- Separation process, &c., iv, 43.
- Storage, iv, 31-33, 34; wholesale depots, iv, 40, 41.
- Wholesale transport, distribution, and weights, iv, 40-42.
- Petroleum Soaps**, iv, 95.
- Petty Cash and Book for, i, 250.
- Pharmaceutical Soaps**, iv, 93.
- Pheasants, iii, 210; shooting and licenses, iv, 15; tinned, iii, 171.
- Phrases used in trade, i, 161-163.
- Piassava for brushes, iv, 101.
- Piccalilli, ii, 220.
- Pickles**—
 - Curing and pickling vegetables, ii, 212-214, 217, 218. [ii, 213, 221.
 - Kinds, centres of trade, and season, Typical pickles—preparation, &c., ii, 218-221; mixed pickles, ii, 212, 213, 219; olives, ii, 266.
- Pig-breeding, slaughtering, &c., for production of bacon, iii, 95-101.
- Pimento, iii, 167, 178.
- Pine-apple Ice-cream, ii, 247.
- Pine Apples—crystallized, &c., ii, 141; fresh, ii, 262, 263.
- Pipes, Tobacco—stock and restoration of soiled goods, iv, 208, 214.
- Pistols—sale restrictions, &c., iv, 218.
- Plain Soaps, iv, 88-90.
- Planning and Fitting of Shops**—
 - Art in design, i, 65.
 - Catalogues from outfitters, i, 79.
 - Cheap and medium trade, i, 72, 73.
 - Counters, i, 72, 73. [78.
 - Fitting-up on various sums, i, 73-77.
 - General hints, i, 70, 71, 89.
 - Good shop plan and general planning, i, 68-70. [70, 71, 72.
 - Grocery and provision fittings, i, 69.
 - Large town, London shops, exhibitions, and modern style, i, 66-68.
 - Lighting and Heating (see those titles, also title Gas and Fittings).
 - Marble and special "butter" fittings, i, 29, 46, 65, 67. [title).
 - Mills and other Machinery (see that Miscellaneous fittings—bins, i, 80; check-tills, cash railways and tubes, i, 86-89; show-frames, &c., i, 67, 68, 79, 80; scales, weights, i, 85, 86.
 - Oil store fittings, i, 73.
 - Specification, estimate and particulars from firms, i, 71-73.
 - Windows and window-dressing (see that title). [i, 71.
- Wines and spirits—accommodation,
- Plaster of Paris, iv, 123. [308.
- Plate-dealer's License, iv, 15, 16.
- Plate-glass—cleaning, i, 211.
- Plate Polishes and Powders, iv, 122, 127, 128.
- Plum Jam, ii, 137, 206.
- Plum Pudding, iv, 267.
- Plums and Prunes**—
 - Crystallized, &c., ii, 141. [ii, 132.
 - Difference between plums and prunes, Dried or Evaporated, ii, 132, 133.
 - American, Californian, ii, 135, 136.
 - Bosnian and Servian, ii, 136, 137.
 - Drying processes, ii, 127, 129, 130, 134, 135. [135.
 - French plums and prunes, ii, 133-136.
 - German and other European varieties, ii, 136. [21, 142.
 - Sources of supply and weights, ii, Re-treating old plums, ii, 135.

Poisoning—

- Arsenic in food-stuffs and beer, iii, 247-249; iv, 181, 182. [221.
- Greening of vegetables, &c., iii, 218-219.
- Paints and use of lead, &c., iv, 106.
- Pork-pie poisoning, iii, 167.
- Tinned meats and fish, iii, 167, 187.
- Poisons**, iv, 121, 194-196, 203.
- Polishing Materials and Pastes**—
 - furniture, floors, &c., iv, 128-130;
 - leather, boots, stoves, &c., iv, 124-126;
 - metals, plate, linen, and windows, iv, 126-128.
- Polony Sausages**, iii, 172, 173.
- Pomegranates**, ii, 263, 264.
- Pomelo**, ii, 264.
- Pont l'Evêque Cheese**, iii, 70, 71, 88.
- Pork**—
 - Aberdeen pickling, iii, 193.
 - Breeding and slaughtering of pigs for bacon, &c., iii, 95-101.
 - Buying, iii, 202, 240.
 - Cost of production, iii, 95.
 - Cuts of pork, iii, 201.
 - Sources of supply and hog-packing in U.S.A., iii, 14, 15.
 - [See also title Bacon and Hams.]
 - Pork Pies—poisoning by, and description of, iii, 167, 175.
 - Pork Sausages, iii, 172.
 - Porpoise Oil, iv, 47.
 - Port de Salut Cheese, iii, 70, 71, 83.
 - Porter, and bottling of, iv, 180, 183.
 - Porters—duties of, i, 130, 132, 134.
 - Porto Rico Coffee, ii, 66, 67.
 - Port Wine, iv, 156, 157, 167; clearing, iv, 169; bottling, iv, 170; buying, iv, 173.
 - Positions for shops, i, 60; iv, 8.
 - Posters for advertising, iv, 267, 268.
 - Potato-Starch, ii, 118, 119, 157.
 - Potatoes**—
 - Bread-making uses, ii, 229.
 - British crops, ii, 272.
 - Dried potatoes in soup, iii, 216.
 - Sources of supply, imports, and seasons, ii, 269, 272.
 - Starch percentage in, ii, 117.
 - Sweet-potatoes and Yams, ii, 270.
 - Varieties and storage, ii, 269.
 - Potted Cream, iii, 162, 163.
 - Potted Goods (see title Tinned Goods, Potted Meats, &c.).
 - Poultry**—
 - Breeding, &c., for production of eggs, iii, 123-126; for market, iii, 207, 208.
 - Cold storage, iii, 231, 232, 233.
 - Frozen supply, iii, 203, 204.
 - Retail prices and buying, iii, 204, 205.
 - Sources of supply, iii, 17, 206-208.
 - Tinned, iii, 172.
 - Pound-Cake**, ii, 237.
 - Preservatives**—
 - Butter, iii, 41, 42, 44. [220.
 - Greening of vegetables, &c., iii, 218-219.
 - Influence on trade by use of, iii, 1, 2.
 - Leather, iv, 125. [164.
 - Milk and cream, iii, 155, 156, 162.
 - Sale regulations, iv, 203.
 - Stone, wood, &c., iv, 129. [191.
 - Tinned meats, potted goods, iii, 167.
 - Preserved Foods, &c.**—sources of supply, iii, 3, 15.
 - Preserved Fruits** (see titles Fruits, Preserves).
 - Preserved Ginger**, ii, 174.

Preserves and their Preparation—

- Classification of, ii, 198.
- Crushed fruit, ii, 204.
- Fruit-juices, ii, 204, 205.
- Fruit not in syrup, ii, 165.
- Fruit-pulps, ii, 204.
- Fruits in water, in syrup, and in spirit, ii, 201-204.
- Grape-fruit, ii, 264.
- Guaranteed as labelled, iii, 263.
- Marmalade, ii, 207.
- Methods and principles of preserving, ii, 198, 199, 200.
- Sterilizing bottled and canned fruits, ii, 200, 201.
- [See also titles Crystallized Fruit, Dried or Evaporated Fruit, Jams, Jellies, Vegetables.]
- Pressed Beef—tinned**, iii, 169.
- Prices**— [198, 206, 207.
- All-at-one-price window dressing, i, Branch shop alterations, i, 260, 264.
- Cutting down for customers, i, 190.
- Grocers' associations and the arranging of prices, iv, 270, 271.
- Quality v. price of article, i, 103.
- Wholesale prices—chart for, iv, 258, 259; study and specimen sale conditions, "prices current", &c., i, 155, 156; iv, 254, 257, 258.
- Price-lists**, iv, 3, 7, 11, 265-267; special lists for seasonable goods, &c., iv, 267, 268.
- Price Marks**—systems for, i, 168.
- Primrose Soap**, iv, 89.
- Profits**—
 - Art of salesmanship—prior sale of profitable goods, i, 191, 192.
 - Gross profits on turn-over of stock, i, 53; iv, 262, 263.
 - Proprietor fixing profits—policy of "living profit", iv, 259-263.
- Promenade Biscuits**, ii, 234.
- Promissory Notes**, i, 253, 254.
- Proof Spirit** and strength of "under" and "over" proof spirit, iv, 146, 148; for beer, stout, &c., iv, 179.
- Proprietary Articles**— [158.
- Buying for stock, i, 97, 152, 154, 155.
- Checking, storage, marking prices, and despatching, i, 167, 168, 213.
- Goods sold as, demand for, iv, 204.
- Own-brand goods in competition with, i, 32; iv, 12, 205-207.
- Price-cutting and profit—P.A.T.A. organization, and fixed minimum prices, iv, 204, 205. [207.
- Registering trade mark or label, iv, Sale—policy and art of salesmanship, i, 102, 192, 193.
- Proprietor of Grocery Shop**—
 - Book-keeping system, &c., iv, 263, 264. [thodical way, iv, 262.
 - Departmentalizing business in me-
 - Expenses book, and printed order card, iv, 264, 265. [262.
 - Fixing profits—calculations, iv, 259-260.
 - Gross profits on articles, iv, 262, 263.
 - Stock book for, iv, 261, 262, 264.
 - Stock-taking balance sheet for, iv, 264.
 - Study of wholesale markets by, iv, 254, 257, 258.
- Provincial Shops and Methods**—
 - Assistants, i, 133, 134; shop rules, i, Buying stock, i, 143. [135-138.
 - Department store, iv, 7-12.
- Provision Business**—definition and purchase, i, 22, 48.

Provision Departments—average gross profits, iv, 262, 263; fittings and arrangement, i, 70, 71, 73; iv, 9; shop routine and separate accounts, i, 176; typical shop in Britain, i, 25, 26, 28, 31, 32, 33, 34; abroad, i, 36, 37, 40, 42.

Provisions—

Branch shop, i, 259, 260, 262, 263.
Buying and cutting up, i, 97, 143, 144, 145; iii, 240-242, 244.
Development of trade in, iii, 1.
Dressed provisions—tinned goods, iii, 171. [iii, 245, 246.]
Foods in season each month—list.
Leakage system in company shops, i, 271. [244, 245.]
Miscellaneous hints on handling, iii.
New season's supplies, iii, 246, 247.
Storage of stock, i, 163. [257.]
Wholesale markets in London, iv.
Window-dressing (see Windows, &c.).
(See also titles Provision Departments, Sources of Supply.)

Provisions Hands—

Apprenticeship and early training, iii, 239, 240.
Cutting up bacon, &c., iii, 238, 239.
First and second hands in London and provincial shops, &c., i, 129, 133, 134. [iii, 236, 237, 239.]
Ideal assistant—qualifications, &c.,
Window-dressing and other duties, iii, 237, 238.

Prunes (see title Plums and Prunes).

Ptarmigans, iii, 209.

Public Health Acts, iv, 242.

Pudding Spice, ii, 177, 178.

Pumice-stone, iv, 123.

Purchase of Business (see Capital and Business).

Purchase Returns Book, i, 229.

Purée de foie Gras, iii, 189.

Putty, iv, 116, 117.

Q

Quails—supply, treatment, and cooking, iii, 210.

Quality %. Price of articles, i, 103.

R

Rabbits and Hares—buying, iii, 204, 205; frozen and tinned, and sources of supply, iii, 11, 15, 192, 203; shooting and license, iv, 15.

Raddle, iv, 116.

Railway Rates, &c.—

Checking railway accounts, claims for breakages, &c., iv, 252-254.
Delivery of goods—signing of sheet, and caution as to, i, 165, 166; iv, 253. [goods, iv, 250, 251.]
Law as to delivery and charges for Methods of sending or obtaining goods, and detecting errors and overcharges, iv, 252.
Rates to local stations, &c., and general classification of merchandise, iv, 251, 252.

Raisins, ii, 137-139; sources of supply, and weights, ii, 21, 142.

Rape Oil, iv, 42, 61, 76.

Raspberry Ices, &c., ii, 247.

Raspberry Jam, ii, 206.

Raspberry Syrup, ii, 165.

Ratafia Biscuits, ii, 234.

Rates and Taxes—tenant's and landlord's liabilities, i, 63, 64.

Rats on premises, i, 172.

Ravison Oil, iv, 61, 76.

Raw Sugars, ii, 143, 156; duties and polarization, ii, 151; refining, ii, 143, 144 (see also Sugars, sub-headings Cane, Beet).

Ray-liver Oil, iv, 46.

Receipts—stamping, &c., i, 254, 255.

Rectified Spirit, iv, 147.

Red Paints, iv, 110.

Red Wheats, ii, 95.

Red Wines—colour, production, and clearing, iv, 149, 150, 169.

Refractive Power of oils, iv, 77.

Refreshment-house license, iv, 17.

Refrigeration (see Cold Storage).

Reichert-Wallny analysis for butter, &c., iii, 42, 47-49, 60.

Reindeer Tongues, iii, 170.

Rennet Test for arsenic in beer, iv, 181, 182.

Rennet in cheese manufacture, iii, 71, 72. [for, &c., i, 62-65.]

Rent—law on, cases of fire, distraint

Repairs to premises—law on, i, 63, 64.

Restaurants in grocery establishments, iv, 4, 7.

Restraint of Trade—assistants and law as to, i, 125, 126.

Returns Book, &c., i, 226, 229, 247, Revalenta, ii, 116. [265.]

Rice, ii, 105, 106; guarantee against adulteration, iii, 263; sources of supply and weights, ii, 9, 107.

Rice-Starch, ii, 118.

Rioja Wine, iv, 158.

Roast Beef—tinned, iii, 168, 192.

Roasting Meat, iii, 203.

Rock—sweets, ii, 243.

Rock Cocoa, ii, 90.

Ropes, iv, 145.

Roquefort Cheese, iii, 70, 71, 83, 84.

Rosbach Water, iv, 186.

Rose Soap, iv, 93.

Rosin or Resin, iv, 74.

Rosin Soap, iv, 86, 89.

Rotten-stone, iv, 122. [123.]

Rouge—jewellers' and toilet, iv, 122.

Roumanian Petroleum, iv, 69.

Royal Arms—authorized use, iv, 13.

Royal Honours to grocers, i, 19, 20.

Rum and Rum Shrub, iv, 162, 169.

Rusks, ii, 234, 235.

Russian Butter—dairying in Siberia, export trade, &c., iii, 3, 8, 9, 12, 33-35; grades, weights, and prices, iii, 27, 28.

Russian Caviare, iii, 189-191.

Russian Eggs, iii, 128.

Russian Herrings, iii, 186.

Russian Oil-fields and petroleum, iv, 65, 68, 69.

Russian Tallow, iv, 80.

Russian Tongues, iii, 170.

Russian Typical Shops, i, 38.

Russian Wheat crops and exports, ii, 2, 4, 5. [tures, iv, 126, 127.]

Rust preventive and anti-rust mix-

Rye, ii, 3, 103, 107.

S

Saccharine and Saccharum, ii, 19, Saffron, iii, 255; iv, 131. [158.]

Sago, ii, 9, 110-113.

St. Domingo Coffee, ii, 66, 67.

St. Ivel Cheese, iii, 89.

Salad Oils, iv, 54, 57, 59, 63, 64; selling olive oil as, iv, 55, 56.

Sale of Foods and Drugs Acts—

Administration, &c.—definition of "food" and "drug", adulterations forbidden, &c., iv, 228-231.
Condensed milk, iii, 159, 160.

Margarine cheese, iii, 89.

Milk colouring and preservation, iii, 155, 156.

Standards of food under, iii, 247-249.

Warranties with stock and the protection of retailer, i, 159, 160.

Sale of Goods Act, 1893, iv, 246-248.

Sale of Goods by "description", "sample", &c.—custom and law on, iv, 246-248.

Sales or Day Book, i, 226, 228, 256; for branch shop, i, 259, 262.

Salesmanship—Art of:

American "Don'ts", i, 196.

Bacon and ham sales, iii, 117-120.

Character of customers, study of, i, 187-190. [i, 193, 194.]

Children and servants as customers,

Complaints, mistakes, enquiry office, i, 195. [190, 191, 194, 195.]

General treatment of customers, i,

Sale of profitable and proprietary articles, or goods too handy, i, 191-193. [182.]

Salmon—tinned, iii, 15, 16, 180, 181.

Salt—Indian story on illicit salt, and early trade in, i, 3, 11; deposits, mines, and centre of manufacture, ii, 190, 191; salt from the sea, manufacture of brine salts, ii, 192-194.

Samphire Soap, iv, 93.

Samples—

Analysis of samples of stock by chemist—precaution, i, 160.

Butter—hints on buying, iii, 28, 36; tests and analytical methods, iii,

45-49.
Buying from—comparison of travellers' samples, i, 151.

Presentation to customers, i, 195.

Sale of goods by—law, iv, 246-248.

Sampling of goods under food laws, iv, 223, 234-236.

Sandarac Varnish, iv, 119, 120.

Sand-paper, iv, 124.

Sand Soap, iv, 94.

Sanitas Disinfectant, iv, 74.

Sardine Oil, iv, 49.

Sardines—fisheries and tinned, iii, 182-185, 186, 261; sources of supply, and weights, iii, 16, 192.

Sassafras Tea, ii, 43.

Sauce Piquante, ii, 196.

Sauces—condiments classed as, and general basis of, ii, 166, 194; keeping bottled sauces, ii, 196; sources of supply, ii, 23; various kinds, ii, 195-198.

Saumur and Sauterre Wines, iv, 157, 158.

Sausage Meal, iii, 172.

Sausages, iii, 99, 101, 172-175; season for, iii, 247.

Saveloy Sausage, iii, 173.

Scales and Weights—

Alteration, or weighing goods with paper under scoop—law on, iv, 249.
Examination by inspectors, &c., i, 138, 268, 269, 270. [174; 182, 270.]

Forms and management, i, 85, 86.

Scented Teas, ii, 35, 37, 50, 53.
Schabzieger Cheese, iii, 70, 88.

Scotch Acreage for crops, ii, 3, 4, 9.
Scotch Barley, ii, 100, 101.

Scotch Cheddar Cheese, iii, 79, 247.

Scotch Fisheries, iii, 16.

Scotch Licenses for liquor, &c., i, 33; iv, 20, 21, 23.

Scotch Oatmeal, ii, 102.

Scottish Oils, iv, 65, 69, 70, 83, 96.

Scottish Shops and Methods—
Book-keeping, i, 222, 223.

Capital for business, i, 49. [1, 2.]

Commercial education facilities, i,

Typical shops and licenses, i, 32, 33; iv, 20, 21, 23.

Window-dressing, i, 197, 203.

Sea Biscuits, ii, 235. [192-194.]

Sea-salt—manufacture of salt from, ii,

Sea-side Typical Shops, i, 33, 34.

Seal Oils, iv, 44, 45, 76.

Seasons—buying of stock, new seasons, i, 144, 145; monthly list of foods in season, iii, 245, 246; soliciting orders, i, 186; wholesale market arrivals, iv, 246, 257, 258.

Seats for Shop Assistants Act,

Seed Cake, ii, 238. [iv, 243.]

Seed Oils, iv, 43. [218-220.]

Seeds—flower, vegetable, and herb, iv,

Self-raising flour, ii, 226.

Self-Everything principle, iv, 1, 2.

Selling Prices—marks on goods, i, 168. [waters in, iv, 189.]

Seltzogenes—preparation of aerated

Semolina, ii, 98, 99.

Sending out Goods and Orders—

Checking and invoicing before despatching, i, 214, 215.

Country orders, i, 216, 217.

Delivery methods, i, 215, 216.

Department stores system, iv, 11.

Directions for making up a parcel or basket, i, 214, 216. [iii, 239.]

Duties of staff, i, 130, 131, 132, 133;

Packeted goods, ready-made bags, and proprietary articles, i, 213.

Shop rules—specimen, i, 137.

Shops on wheels, i, 218, 221.

Vans and other vehicles (see Vans).

Separators for milk, &c., iii, 8, 9, 12, 20.

Serum in milk, iii, 18.

Servants as customers, i, 193, 194.

Servian Plums, ii, 136. [iii, 51, 59.]

Sesamé Oil, iv, 64, 76; in margarine,

Setting up a Business (see titles Capital and Business, Starting a Business).

Shaddock, ii, 264, 265.

Shale Oil, iv, 65, 67, 70, 83, 96.

Shark-liver Oil, iv, 46.

Shea Butter, iii, 61. [203.]

Sheep Dip, &c.—sale regulations, iv,

Sheep's Tongues, iii, 170.

Sherry Wines, iv, 158, 169, 173.

Shop and Trade Law—

Accident compensation, insurance, and drivers' risks, iv, 244, 245.

Commission agents, &c., embezzlement, iv, 245.

Shop and Trade Law—(Cont.)

County Court procedure, debt-collecting, &c., iv, 249, 250.

Employees—acts relating to, and enforcement of shop rules, iv, 242-244.

Factory or Warehouse—grocer's premises described as, iv, 244, 245.

Partnership—conditions, &c., iv, 250.

Sale of Food and Drugs Acts (see that title).

Sale of goods—laws on, iv, 246; sale by description, sample, &c., iv, 246-248.

Weights and Measures Acts, and paper weighed with goods, alteration of scales, &c., iv, 248, 249.

Shop Books (see Book-keeping).

Shop Fittings (see title Planning and Fitting of Shop).

Shop-floor—tiles, &c., for, i, 25.

Shop-fronts—design, &c., i, 65.

Shop Hours Act, iv, 242.

Shop Rules for Assistants, &c.—American rules, i, 140. [272.]

Company shops, i, 135-138, 265-270.

Fines and wage deductions—law as to enforcement, &c., i, 139; iv, 243, 244.

Inspector and office duties, i, 138.

Shop System and Routine—

Cash-taking systems, i, 174-176.

Checking goods and filing of invoices, i, 180. [174.]

Classification in various sections, i,

Cost prices—assistants' knowledge of, i, 180, 181.

Economy in little things, i, 182.

London shop routine, i, 177, 178.

Miscellaneous hints, i, 178, 179.

Orders (see titles Sending Out Goods, Soliciting Orders).

Provision Departments (see that Staff duties, i, 176, 177. [title].)

Stock regulation, i, 181, 182.

Successful working—hints on, i,

Shops— [55-58.]

Competition of neighbouring shops—protection, &c., i, 21.

Conversion of dwelling-house into shop, iv, 13.

Early trade, i, 9-11, 11-13, 18, 19.

Modern shops, i, 21.

Shops on wheels, i, 218, 221.

Statistics on number, &c., i, 21, 22.

[See also titles Branch Shops, Capital and Business, Company Shops, Department Stores, Planning and Fitting of Shops, Starting a Business, Typical Shops.]

Shop-signs—cleaning, &c., i, 211, 212; iv, 127.

Shortages—checking and rules for, i, 165, 167, 267.

Shortbread, ii, 234, 235.

Show-cards—charge for exhibiting, &c., i, 208.

Show-cases, &c., for shops, i, 67, 68, 79, 80. [188.]

Shrimps—paste and potted, iii, 187,

Shutters for windows, i, 197, 213.

Siberian Dairying and Butter, iii, 3, 8, 9, 12, 33-35.

Sicilian Salt Industry, ii, 192-194.

Silicated Soap, iv, 94.

Silver Goods—sale license, iv, 208.

Size and Sizings, iv, 135, 136.

Skimmed or Separated Milk, iii, 152-154; adulteration of whole milk with, iii, 151, 152.

Slate Tickets for shops, i, 211.

Smyrna Figs, ii, 131, 132.

Soap Powders, Balls, &c., iv, 141.

Soap-stone, iv, 123.

Soaps— [90, 95.]

Classification and analyses, iv, 88, 89,

Composition and manufacture of hard and soft soaps, iv, 86-88.

Household or plain soaps and analysis, iv, 88-90. [94, 95.]

Manufacturing and other soaps, iv,

Original use of term "soap", history and inventions, iv, 85, 86.

Pharmaceutical and disinfecting soaps, iv, 93, 94. [204, 205.]

Storage and window-dressing, i, 169,

Toilet or fancy soaps, iv, 90-93.

Soda for washing, iv, 142, 143.

Soda-water, iv, 186, 189.

Soft Soaps, iv, 86, 88, 94.

Soft Sugar, ii, 145.

Solar Oil, iv, 69.

Soliciting Orders—assistants' duties, i, 131, 133; booking, i, 180; general directions, i, 183-186; practice and need of, i, 177, 178, 183.

Soluble Cocoa, ii, 90.

Somerset Cheese, iii, 70.

Sorghum, ii, 143, 150.

Souchong Teas, ii, 31, 32, 35; water for, and blending, ii, 49, 50.

Soup-tablets, Squares, &c., iii, 213-215.

Soups, Preserved, iii, 211, 213; desiccated, iii, 213-216; meat-biscuits, iii, 216; tinned or bottled, iii, 211-213; vegetable soups, iii, 215, 216; weights, iii, 191, 192.

Sources of Supply—Groceries and Provisions—

A world survey—articles imported by grocers, ii, 1, 2; iii, 4, 5.

Bacon and hams, iii, 13, 14.

Barley and rye, ii, 3.

Breadstuffs, ii, 2-4.

Butter, iii, 3, 4, 5-7, 8, 9-11, 12.

Cocoa and products of, ii, 16, 17.

Coffee—consumption, crop statistics, &c., ii, 12-14; various coffees, ii, 14-16. [13, 15.]

Cheese and imitation cheeses, iii,

Cold transport and use of preservatives—influence of, iii, 1, 2.

Dairy produce, iii, 7-9, 9-11.

Dried and preserved fruits and vegetables, iii, 16, 17. [tables, ii, 21.]

Fish supplies, iii, 15, 16.

Food crops in Great Britain—acreage, ii, 3, 4, 9.

Green fruits and vegetables (see titles Fruits, Vegetables). [17, 18.]

Hand-to-mouth British policy, iii,

Home supplies of provisions, &c., iii, 4, 5-7.

Honey, ii, 19-21.

Importation statistics, iii, 4, 5; want regarding Irish supplies, iii, 4.

Indian corn and maize meal, ii, 3.

Margarine and lard, iii, 12, 13.

Meat—frozen and canned, iii, 3, 15.

Oats, oatmeal, and groats, ii, 3, 8, 9.

Perishable goods and means of conveyance, iii, 2, 3. [14, 15.]

Pork and hog-packing in U.S.A., iii,

Sources of Supply—Groceries and Provisions—(Cont.)

- Poultry and game, iii, 17. [ii, 9.
Rice, rice-meal and -flour, and sago,
Speed *v.* cheapness in transportation,
iii, 2, 3. [22, 23.
Spices, sauces, and condiments, ii,
Sugar and sweetening substances,
ii, 17-19, 21.
Tea, ii, 9-12, 23. [4, 15, 16.
Tinned and preserved goods, iii, 3.
Wheat, ii, 2-4; world's yield and
problem for supply, ii, 4-8.
Sour-milk Cheeses, iii, 71, 91.
South African Fruits, ii, 267.
South African "Mealie", ii, 103,
104. [41-44.
South African Typical Shops, i,
South American Coffees, ii, 66, 67.
Soy for sauces, ii, 195.
Soya Cheese, iii, 89.
Spaghetti, ii, 99.
Spanish Chocolate, ii, 93.
Spanish Figs, ii, 132.
Spanish Vich Sausages, iii, 174.
Spanish Wines, iv, 152, 158.
Specific Gravity—alcohol and
liquors, iv, 147, 148, 149; brandy,
iv, 161; butter and lard tests, iii,
46, 67; oils, iv, 63, 67, 74-76; rum
and whisky, iv, 162, 164.
Speed *v.* Cheapness in transporta-
tion of provisions, iii, 2, 3.
Sperm Oil, iv, 48, 49, 75, 76.
Spermaceti, iv, 48, 85. [i, 13, 14.
Spice Tester—ancient appointment,
Spiced Beef—tinned, iii, 169.
Spicer—origin of name, i, 9.
Spices—
Adulteration, ii, 167, 169, 171, 173,
174, 175, 176; warranty against,
ii, 263. [iii, 253.
American definitions and standards,
Cake manufacture, ii, 237.
Classification and uses, ii, 166.
Description, Composition, &c.
Allspice or pimento, ii, 167.
Capers, capotes, and capuchines,
ii, 170, 171. [170.
Cardamoms and cubebs, ii, 169.
Cassia Lignea and buds, ii, 167, 168.
Mace, Bombay and Malabar mace,
ii, 175, 176. [178.
Mixed or pudding spice, ii, 177.
[See also Cinnamon, Cloves,
Ginger, and Nutmeg.]
Early trading in spices, i, 13.
Sources and weights, ii, 22, 23, 178.
Spinach—tinned, iii, 221.
Spindle Oils, iv, 68. [iv, 168.
Spirit Casks—cleaning restrictions,
Spirits—storage, iv, 31-33. [See also
title Wines and Spirits.]
Spirits of Wine, iv, 147.
Sponge-Cake, ii, 238. [i, 199.
Sponges, iv, 143, 144; window display,
Spring Cleaning of shops, i, 272.
Stable (see title Horse and Stable).
Staff—Engagement and Duties:
Bonuses (see Commission System).
Branch shops, i, 256, 257.
Capitals of £500 and £250—staff
suitable, i, 97.
Dismissal, notice, &c., i, 126, 127.
Fidelity guarantee insurance, &c.,
i, 127-129.
Holiday rules, i, 116, 117, 136.

Staff—Engagement and Duties: (Cont.)

- Laws on employment, hours, enforce-
ment of shop rules, iv, 242-244.
Legal responsibilities under food
laws, iv, 240, 241.
Manager engagement, &c., i, 124, 126.
Regular duties and routine, i, 176, 177.
Restraint of trade, i, 125, 126.
[See also titles Apprenticeship,
Assistants, Provision Hands.]
Staining of Wood, iv, 117.
Stains on Floors, &c., iv, 129.
Stamp License, iv, 16.
Stamps for stamping goods, &c., i, 98.
Standards for food-stuffs (see Food
Standards).
Standards for shop-fitting, i, 79, 80.
Starch—kinds, constituents and manu-
facture of, ii, 118, 119; quantities
and yield per acre in cereals, &c.,
ii, 108, 117, 118; tests for presence
of, ii, 120; use in cocoa preparation,
ii, 90, 91. [128.
Starch Polishes, Glazes, &c., iv,
Starch Sugar, ii, 157.
Starting a Business— [97, 98.
Bank account and book-keeping, i,
Business taken over, i, 98, 99.
Capital and business (see that title).
Cash *v.* credit systems, i, 99-102, 104.
Essential points for, i, 96, 97.
General suggestions, "twelve helps"
to increase trade, i, 103-105, 106.
Licenses and other sanctions required
(see Licenses).
Oilman's stock, iv, 29.
Opening day and handbills, i, 105-109.
Own name and other goods—policy
of selling, i, 102, 103.
Soliciting orders, i, 183, 184.
Stock buying (see Stock).
Stationery—department for sale of,
iv, 10; grocers' business forms, iv,
250, 265, 268.
Status of the grocery trade, i, 4, 9, 10.
Stearine, iv, 47, 50, 62; distinction
from stearin, iv, 80, 81.
Sterilizing of Food, &c.—principles
of, and for fruit, ii, 200, 201; milk
and condensed milk, iii, 25, 157;
tinned meats, iii, 168; vegetables,
iii, 211, 213, 216.
Stilton Cheese, iii, 70, 71, 75, 84-86,
92; weights and storage, iii, 93, 94.
Stock—
Buying Hints, i, 143, 154.
Card index, Wants-box, i, 147, 148.
Colonial grocer on "own buying"
and "overbuying", i, 145-147.
[152.
Combined buying schemes, i, 151.
Commercial travellers—dealings
with, i, 148-151.
Forward buying systems, i, 152-
154. [148.
Novelties and change of brands, i,
On "change" or at exhibitions, i,
144. [143, 144.
Provisions and heavy articles, i,
Samples—orders from, i, 151.
Speculative buying, i, 144, 145.
Trade paper—perusal and sub-
scription to, i, 144.
Treating in the trade, i, 150.
Where and when to buy, i, 143,
144.
[See also Wholesale Markets.]

Stock—(Cont.)

- Commencing business—first stock
purchase and credit, i, 95-97, 155-
156.
Fire—prevention and precautions,
i, 174; iv, 33.
Hand-to-mouth British policy, and
effect of war, iii, 17, 18.
Leakage system in company shops,
i, 270-272.
Lists of goods sold in London, sea-
side, and German shops, i, 27, 34,
37, 38.
Oilman's stock, iv, 27-29.
Price marks, i, 168.
Reception and Storage—
Accommodation in cellar, ware-
house, &c., i, 163, 164, 172.
Checking of goods, i, 164, 167.
Conditions necessary to good
stock-keeping, i, 163, 170, 171.
Damaged, spilt, and wasted goods,
i, 165, 166, 173.
Drawers and places for various
goods, i, 168-170, 171, 172.
London shop method, i, 163, 164.
Railway dealings, i, 164, 165, 166.
Rats, mice, and beetles—destruc-
tion, i, 172, 173.
Regulation of shop supply, i, 130,
133, 181, 182.
Sending out goods (see that title).
Spoiling by exposure, i, 204.
Stock-taking Procedure, i, 237.
Auditors' services, i, 236, 237, 238-
Balance-sheet, iv, 264. [242.
Branch and company shops, i,
258, 266, 267.
Provision department, iii, 238, 245.
Trading account, i, 234, 235.
Terms and Warranties—
Adulteration of goods and protec-
tion of retailer, i, 159.
Commercial phrases and abbrevia-
tions, i, 161-163.
Credit terms from wholesalers, i,
53, 54, 95, 96, 155, 156, 158, 231.
First order, and special terms, i,
155, 156.
Specimen sale conditions, "prices
current", American terms, &c.,
i, 156-159.
Travellers and accounts, i, 156.
Warranties with goods—form, &c.,
i, 159-161.
Weighing up stock, i, 130, 131, 138.
Stock-Book, iv, 261, 262, 264.
Stocks for sauces, ii, 195, 196.
Stokos, iv, 190.
Stones for cleaning, &c., iv, 121-124.
Stores Law in Germany, i, 37, 38.
Stouts and bottling, iv, 180, 183.
Stove Polishes, &c., iv, 126.
Stracchino Cheese, iii, 70, 71.
Strand Shops and polite grocers, i,
Strasburg Tongues, iii, 170. [24.
Strawberries—fresh, ii, 267; preserv-
ing, ii, 203, 206. [ii, 247.
Strawberry Ices and Ice-cream,
Strawberry Syrup, ii, 165.
Suburban Typical Shops in Lon-
don, i, 24-27, 67, 68.
Success in Business, i, 46, 47; cor-
respondence, &c., on, i, 55-58.
Sucramine, ii, 159.
Sucroses (see Sugars, subheading
Cane Sugars).
Sugar-candy, ii, 242.
Sugar-cane, ii, 143, 146.

Sugar-cured Ham, iii, 107.
Sugar Drops, ii, 242.
Sugar-Mites—detection, ii, 156, 157.
Sugar Syrups (see Syrups).
Sugar Vinegar, ii, 216.
Sugared Fancy Fruits, ii, 140, 141.
Sugars—
 Adulteration, ii, 153, 154, 156; iv, 222; warranty and sale precautions, iii, 262, 264.
 American definitions and standards, ii, 158; iii, 252.
 Beet and cane sugars compared, ii, 147, 154, 155. [iii, 53.]
 Beet sugar, crystals, &c., ii, 147-149;
 Blueing, colouring, and dyeing, ii, 146, 153, 154, 155, 156.
 Branch shop sales, i, 260, 263.
 Cane sugars or Sucroses, ii, 143, 150.
 Description of sugar-cane, ii, 143, 146.
 Jaggery, maple, and invert sugar, ii, 143, 147, 149, 150, 158.
 Preparation of cane sugar, crystals, loaf, cubes, granulated, and other forms, ii, 143-146.
 Warranty with purchase, iii, 262.
 Chemistry and Analysis, ii, 150, 155.
 Adulterants and dyes, ii, 153, 154, 156.
 Polarizing method, Fehling's test, and saccharimeter for testing sugar, ii, 150-152, 158.
 Classification for domestic and manufacturing uses, ii, 142, 143, 150, 157.
 Cold storage, iii, 233. [151.]
 Customs duties and polarization, ii, Demerara sugar, ii, 153, 154, 155, 156; iii, 263, 264.
 Early uses, i, 10, 17.
 Glucoses or grape sugars, ii, 21, 143, 157, 158.
 Leakage allowance in shops, i, 271.
 Milk sugar or lactose, ii, 152, 153.
 Molasses, Mассеuite and sweets from, i, 19, 143, 144, 148, 243.
 Packing and weighing in bags, i, 213; iv, 248, 249.
 Sources of supply—"bounty fed" and other sugars, ii, 17-19, 21.
 Stock purchase, i, 97, 154.
 Storage, i, 171; iv, 255.
 Sugar-mites in, ii, 156, 157.
 Sweetening substances not sugar, ii, 19, 158, 159.
 Wholesale terms, weights, and marks, i, 157; ii, 149; London sales and new seasons, iv, 256, 258.
Sulphated Soaps, iv, 94.
Sultana Raisins, ii, 139.
Summer Drinks, iv, 189.
Summons under food laws—defence of retailer, &c., iv, 236-241.
Sun-blinds, i, 76, 212.
Sun-dried Meats, iii, 175, 176.
Sunflower Oil, iv, 56, 64, 76.
Surrey Cheese, iii, 70.
Swedish Bacon, iii, 108.
Sweet Oil—sale precautions, iv, 40.
Sweet-Potatoes, ii, 270.
Sweetening Substances, ii, 19, 158, 159 (see also Sugars, Honey, Syrups).
Sweets (see Confectionery).
Sweets License, iv, 16, 17.
Swiss Cheeses, iii, 81.
Swiss Wines, iv, 158, 159.

Syrups and their Preparation—
 Adulteration—warranty and sale precautions, iii, 262, 264. [iii, 252.]
 American definitions and standards,
 Fruit syrups, ii, 164, 165.
 Preserving fruits in syrup, ii, 202, 203.
 Sugar syrups, ii, 161.
 Golden syrup, treacles, and molasses, ii, 161-163, 164; sale precautions, iii, 264. [163.]
 Green syrup from loaf sugar, ii, 145;
 Summer drinks, iv, 189.

T

Talc, iv, 123.
Tallow, iv, 41, 79, 80.
Tallow Candles, iv, 96, 98.
Tallow Chandler, i, 22.
Tallow Oil, iv, 49, 50, 76, 79.
Tamarind, ii, 266.
Tannin—in tea, ii, 39, 40; in cocoa, &c., ii, 90, 91, 93.
Tapers, iv, 99.
Tapioca, ii, 113-115; iii, 264.
Tar, iv, 107.
Tarragona Wine, iv, 158.
Tasajo, iii, 175.
Taxes (see Rates and Taxes).
Tea and Tea-blending—
 Adulteration, ii, 40-42, 57, 58; special statutes on, iv, 224-227.
 Analyses, constituents and chemistry of tea, ii, 38-41.
 Blending own teas, and points in blending, ii, 44-46, 51, 52, 53, 57.
 Branch shop sales, i, 260, 263.
 Buying stock, i, 96, 154; ii, 44, 50, 51; iv, 256, 257.
 Characteristics of different teas—familiarity essential, ii, 46, 48.
 Classification of kinds, ii, 28, 29, 43.
 Combinations for blending, experiments and guide for suggested blends, and prices, ii, 49, 50, 53-55.
 Culture and Preparation, ii, 11, 12, 26-29, 38.
 Black and green teas, ii, 24, 31, 32-34, 35. [tea, ii, 23-25.]
 Description of plant and history of
 Fancy and special varieties, ii, 37.
 Withering, rolling, and final processes, ii, 27-29, 34, 35. [266.]
 Early circular on virtues of tea, iv,
 Effect of blending, and milling process, ii, 51, 52.
 Imitation and so-called teas, ii, 42, 43.
 Inspection for impurity, &c., ii, 57, 58; American official methods, ii, 43, 58. [57.]
 Keeping qualities of tea, ii, 50, 56.
 Leading line—tea as, i, 103.
 Machinery for mixing, &c., i, 81, 82, 83; ii, 55. [ii, 47, 48, 52, 57.]
 Objects and necessity for blending,
 Public tastes, &c., in tea-drinking, ii, 50, 51.
 Sources of supply and consumption, ii, 10-12; transport routes, &c., iii, 2.
 Storage, &c., i, 164, 170; ii, 55-57; bonded warehouses, iv, 255.
 Tasting and infusing, ii, 38, 46, 47, 59; water suitable, ii, 48, 49.
 Weighing and weights—machines, use of paper, &c., i, 85, 86, 213; ii, 43; iv, 248, 249.

Tea and Tea-blending—(Cont.)
 Wholesale blending, ii, 55, 56.
 Wholesale sales—London, iv, 256;
 new season's goods, iv, 257.
 Window-dressing, i, 198, 199, 206.
 [See also names of special teas.]
Tea-bins, i, 67, 68, 80.
Tea-biscuits, ii, 235.
Tea-cakes, ii, 238, 239.
Tea Merchant—training of, i, 5.
Tea Oil, ii, 39.
Tea-rooms for customers, i, 70; iv, 7.
Temperance Drinks, iv, 189, 190.
Tenancy of a shop (see Landlord and Terra Alba, iv, 123. [Tenant].)
Theine in tea, ii, 39, 40.
Tickets on Goods—policy of, i, 103.
Tickets for Windows, &c., i, 208-211. [tail shop, i, 59, 60.]
Tied Houses system of starting retails for shop-fittings, i, 25, 28, 65, 66.
Tinned Goods, Potted Meats—
 Adulterated and defective goods, responsibility of retailer, iii, 260-262; iv, 40.
 Articles treated, principles and centres of canning, iii, 166, 167.
 Beef in various forms, iii, 167-169, 175.
 Blown tins, i, 204; iii, 167, 191; iv, 40.
 Branch shop sales, i, 260, 264.
 Buying and change of brands, iii, 261.
 Caviare, iii, 189-191.
 Cold storage, iii, 233.
 Dressed provisions, iii, 171.
 Eggs in bulk, iii, 138.
 Essences and extracts—meat, iii, 176-178; yeast fraud, iii, 178. [4.]
 Exploration expedition outfits, iii, 3.
 Fish and sources of supply, iii, 179, 180; varieties, iii, 180-186; caution as to use of, iii, 186, 187. [201.]
 Fruits and sterilizing process, ii, 200.
 Game and poultry, iii, 171, 172.
 Jerked beef, and sun-dried meats, iii, 175, 176.
 Mutton and tongues, iii, 169-171.
 Pâtés, foies gras, and other preparations of goose-liver, iii, 188, 189.
 Potted meats and pastes, iii, 187, 188.
 Preservatives used, iii, 191.
 Sausages, iii, 172-175.
 Shop and window display, i, 40, 41, 42, 45, 204.
 Soups and broths, iii, 211-213.
 Sources of supply, iii, 3, 4, 15, 16.
 Terms, &c., of sale, i, 157.
 Vegetables (see that title).
 Weights and packages, iii, 191-193. [208.]
Tobacco, Cigars, &c.—
 Capital, stock, and licenses, iv, 207,
 Cigars and cigarettes, iv, 212-214.
 Excise regulations, penalties for adulteration, &c., iv, 209, 210.
 Gone-off and shop-soiled stock, iv, 214.
 Handling directions, iv, 209, 210.
 Own mixtures, and mixed parcels, iv, 210, 211.
 Storage and shop display, iv, 208, 209.
 Varieties and judging, iv, 211.
Tobacco License, iv, 24, 207.
Toffee, ii, 243.
Toilet Soaps, &c., iv, 90-93, 198.
Tokay Wines, iv, 158. [196, 197.]
Tomato Sauce and Ketchup, ii,

Tomato Soup, iii, 213.
Tomatoes—fresh, ii, 268, 269; tinned, iii, 221. [170, 171, 102.]
Tongues—potted, iii, 188; tinned, iii.
Trade Descriptions—penalties, &c., under food laws, iv, 241, 242.
Trade Laws (see titles Shop and Trade Law, Food Laws: also titles of special acts).
Trade Mark—registering, iv, 207.
Trading Accounts—making up, &c., i, 234, 235, 243, 244.
Train Oils, iv, 45, 47. [i, 157.]
Transit Risk—scale of goods terms.
Transparent Soaps, iv, 91, 92, 95.
Transport of Provisions—effect of cold storage and preservatives, iii, 1, 2. [titure of salt, ii, 193.]
Trapani Salines and the manufac-
Travellers—buying from, and pay-
 ments to, i, 148-151, 156, 160;
 embezzlement, iv, 245; fidelity
 guarantee, i, 127-129; vehicles and
 license, i, 221 (see also Soliciting
 Orders).
Treacle, ii, 161, 162, 163.
Treating in the trade, i, 150.
Triplicate Book-keeping System,
 i, 245-247.
Tripoli Powder and English Tripoli,
 Trotter Oil, iv, 50. [iv, 122.]
Truck Act, 1896—enforcement of
 shop rules under, iv, 244.
Tunny Fish, iii, 186.
Turkeys—frozen and fresh, iii, 203,
 204, 205, 206; potted turkey; iii, 188.
Turkish Figs, ii, 132.
Turkish Raisins, ii, 139.
Turpentine, iv, 73, 74; by-products
 of, iv, 74; storage and weights, iv,
 33, 41; paint uses, iv, 111.
Turtle Soups, iii, 212.
Tuscan Oils, iv, 54.
Twankay Tea, ii, 33.
Twine and String, iv, 144.
Typical Shops and Methods—
 America, i, 35, 44-47.
 Colonial, i, 35, 40, 41.
 Commercial towns, i, 31.
 Fashionable single shop, i, 31, 32.
 French shops, i, 35, 36.
 German shops, i, 36-38.
 Licensed shops, i, 33.
 Old English styles, i, 23, 24, 29, 30.
 Russia and Far East, i, 38, 39.
 Scottish types, i, 23, 32, 33.
 Sea-side types, i, 33, 34.
 South African, i, 41-44.
 Stores—Co-operative and Army and
 Navy types, i, 34.
 West Indian store, i, 39, 40.
 [See also titles London Shops and
 Methods, Provincial Shops and
 Methods.]

U, V

Unleavened Bread, ii, 224.
**Valencia Almonds, Figs, and
 Raisins**, ii, 121, 122, 132, 139.
Valenta Test for butter, &c., iii, 46.
Valuation of Business, i, 49, 60-62.
Vanilla Chocolate, ii, 93.
Vans and Vehicles, i, 219, 220;
 duties of vanmen, i, 132, 134;
 licenses, exemptions, and legal li-
 abilities, i, 218, 221; iv, 15; whole-
 sale van packing, &c., i, 217, 218.

VOL. IV.

Varnish Brushes, iv, 105.
Varnishes, iv, 118-121, 125.
Vaseline, iv, 67, 68.
Veal—prices, &c., iii, 202.
Veal Loaf, iii, 169.
Vegetable Butters, iii, 61, 62.
Vegetable Colours, iv, 132.
Vegetable Oils, iv, 51-53; manu-
 facture of various oils, iv, 53-64;
 margarine uses, ii, 54, 56; specific
 gravity, iv, 76.
Vegetable Soups, iii, 215, 216.
Vegetable Waxes, iv, 81, 83.
Vegetables—
 Cold storage, iii, 231, 232. [248.]
 Green vegetables sold by grocers, ii,
 Pickling and curing, ii, 212, 213, 214,
 Preserved and Tinned— [217, 218.]
 Appert's process, iii, 216.
 Chief sorts, methods, and analysis,
 iii, 217-221. [222, 223, 224.]
 Compressed or dried vegetables, iii,
 Copper for greening, iii, 218-220,
 221.
 Sources of supply, ii, 21, 217, 271, 272.
Vegetaline, iii, 61.
Vehicles (see title Vans and Vehicles).
Vendors' Lien—conditions of, i, 157.
Venison—sun-dried, iii, 175, 176.
Ventilation of shops, i, 70, 89, 212.
Vermicelli, ii, 99, 100.
Vermouth Liqueur, iv, 166.
Victoria Cheese, iii, 70.
Vienna Bread, ii, 228.
Village Shops, i, 29, 30.
Vinegar, ii, 214-216; guarantee against
 adulteration, iii, 263.
Volatile Oils, iv, 43.

W

Wages (see Assistants).
Walking-sticks, iv, 215, 216.
Walnut Oil, iv, 59. [iii, 261.]
Walnuts, ii, 268; pickled, ii, 217, 220;
Walrus Oil, iv, 45. [148, 258.]
Wants Book and Box, i, 130, 147.
War Risks—sale of goods terms, i, 157.
Warehouse or "Factory"—gro-
 cer's premises described as, iv,
 244, 245.
Warehouses—for stock storage, i,
 163, 164, 172; imported goods,
 bonded warehouses, iv, 255.
Warranties with Goods—
 Adulteration of food-stuffs, and pro-
 tection of retailer, iii, 256-258.
 Defence of retailer summoned under
 food laws, iv, 236-238; definition
 of warranty, and production of false
 warranties, iv, 239-241.
 Fertilizers and feeding-stuffs, iv, 220.
 Groceries requiring guarantees, iii,
 262, 263. [and Warranties.]
 [See also Stock, subheading Terms]
Wash Leathers, iv, 124.
Washing Powders and Soda, iv,
 141, 142. [15.]
Watch Clubs—license required, iv.
Water—purity, town supplies, and for
 teas, ii, 48, 49.
Water Biscuits, ii, 235.
Water Fruit-preserving, ii, 201.
Water-glass—for preserving eggs,
 iii, 139-144; use as paint or glaze,
 iv, 117.
Water Paints, iv, 113, 117.
Waterproof Glue, iv, 137.
Wax Candles, iv, 95, 96, 98.
**Wax Matches, Fuses, and
 Tapers**, iv, 99, 140.
Waxed Colours for floors, iv, 129.
Waxes—classification and com-
 position, iv, 81; bees'-waxes, Japan,
 Carnauba, and other vegetable
 waxes, iv, 81-83; paraffin wax and
 scale, ceresine, spermaceti, &c.,
 iv, 83-85. [264.]
Weekly Summary of trading, iv.
Weighing Paper with goods—law
 on, and weights suggested, iv, 248,
 249. [138, 178.]
Weighing-up Stock, i, 130, 131, 134.
Weights (see Scales and Weights).
Weights and Measures Act, 1878,
 and amending act, 1889, iv, 248.
**Weights and Measures (Metric
 System) Act**, 1897, iv, 248.
Weinrich Process for refining sugar,
 ii, 144. [86.]
Wensleydale Cheese, iii, 70, 71, 85.
West Indian Cocoa, ii, 87, 92.
West Indian Coffees, ii, 66, 67.
West Indian Store, i, 40.
Whale Oils, iv, 47, 76.
Wheat and Wheat-flour—
 Constituents, chemical substances,
 and analyses, ii, 96, 98, 108.
 Crops and grain, ii, 94, 95.
 Gluten in flour, ii, 96, 97.
 Milling wheat and results, ii, 95, 96.
 Sources of supply—imports and home
 supplies, ii, 2, 3, 4; world's pro-
 duction and problem, ii, 4-8.
 Strength and colour of flour—tests,
 &c., ii, 97, 98.
 Wholesale weights, ii, 107.
Wheat-meal Bread, ii, 227.
Wheat-starch, ii, 118, 119.
Whisky, iv, 162-164; clearing, iv,
 169, 171; buying, stocking, bottling,
 and prices, iv, 173, 175-177.
White-lead used in paints, iv, 106,
 107, 111, 113.
White Milk Bread, ii, 225.
White Mustard, ii, 186, 187, 189.
White Paint, iv, 107.
White Soap, iv, 88.
White Vinegar, ii, 216.
White Wheats, ii, 95.
White Wines, iv, 150, 169. [105.]
Whitewash Brushes—treatment, iv.
Whiting or Whitenig, iv, 114, 116.
Wholesale Grocers—definition and
 obligations, &c., i, 22; iii, 259.
Wholesale Markets—
 Conditions of sale, i, 156-159.
 Importation and use of bonded ware-
 houses, iv, 255.
 London sales, iv, 256, 257.
 Prices chart, iv, 258, 259.
 Seasons for goods, iv, 257, 258.
 Study by shop proprietors, iv, 254,
 257.
Wholesale Terms to retailers, i, 53,
 54, 95, 96, 155, 156, 158, 231; tied
 houses system, i, 59. [iv, 38.]
Wicks—candle, iv, 96, 97; oil lamps,
Wiesbaden Fruits, ii, 203.
Wild Birds, iii, 204, 209, 210; shoot-
 ing season, iv, 15.
Wiltshire Bacon—buying, iii, 240;
 cuts, trade terms, and cutting-up,
 iii, 105, 106, 112; pig-feeding, and
 factory preparation, iii, 97, 98.

- Wiltshire Cheese, iii, 70, 86, 93.
- Windows and Window-dressing—
[tissement, i, 196, 197.]
Art of display, and value as advertisement—
Branch shops, i, 260, 265.
Chicago methods, i, 196.
Cleaning and keeping bright, i, 70, 89, 211, 212; iv, 128, 208. [82-84.]
Coffee-roasting machinery, &c., i,
Competitions at exhibitions, i, 199.
Day for dressing, i, 178.
Department provincial stores, iv, 8.
Duties of assistants, i, 130, 133; iii, 237. [i, 208.]
Manufacturers' show cards—use of,
Oilman's shop, iv, 30.
Planning and fittings of windows—
good light, and remedy for dark appearance, i, 65, 66, 67; good plan, i, 68-70; details and estimates, i, 73, 76. [202, 205.]
Plans for Dressing, i, 198, 199, 201,
All at one price, i, 206, 207.
Colour schemes, decoration, and plants, i, 200, 201.
Effect and the use of lights, &c., i, 202, 203.
Models, picture-windows, and set designs, i, 201, 204, 205, 206.
Provision window, i, 199, 203, 204; iii, 119, 237, 244. [iv, 174.]
Spoiling goods by exposure, i, 204;
Sun-blinds, shutters, and ventilation, i, 76, 212, 213.
Tickets—art of writing and bought specimens, i, 208-211.
Tobacco and cigars, iv, 208, 209.
Utensils suitable, i, 199.
Wines and spirits, iv, 174, 175.
- Windsor Soaps, iv, 92.
- Wine Vinegar, ii, 216.
- Wines and Spirits—
Alcohol, absolute alcohol, and proof spirit—production, strengths of over- and under-proof spirit, &c., iv, 146-148.
Alcoholic and non-alcoholic beverages—classification and terms used, iv, 145, 146.
Buying and selling—points, agency & own bottling system, iv, 170-174, 175, 177; empties, i, 158; shop rules, i, 267; whisky prices, &c., iv, 175-177. [149, 150.]
Colour of red and white wines, iv,
Composition of pure and British wines, and culture of vines, iv, 149.
Display in window, and stock in shop, i, 25, 32, 33, 44, 71; iv, 174, 175. [147, 148, 167.]
Duties and excise regulations, iv,
Guarantee against adulteration, iii, 263.
Licenses—off-licenses, iv, 19, 20, 21; liquors, iv, 164; sweet-wine, iv, 165, 17.
Liqueurs or cordials, iv, 164-166.
Methylated spirits, iv, 166, 167.
Storage and treatment in cellar, racking, fining, clearing, and bottling, i, 130, 132, 163; iv, 167-170, 174, 266; cold storage, iii, 233.
Strengths and specific gravities, iv, 148, 149.
Varieties and Preparation of Spirits—
Brandies, Gins, Hollands, and Rums, iv, 160-162.
Processes of production, &c., iv, 146, 147, 159, 160.
Whiskies, iv, 162-164; handling and prices, iv, 175-177.
- Wines and Spirits—(Cont.)
Varieties and Preparation of Wines—
African, Australian, and American wines, iv, 159.
Burgundies, Champagnes, and Clarets, iv, 152-155.
Hocks, Moselles, Madeiras, Malmsbury, Marsala, &c., iv, 155, 156.
Palm-wine, ii, 125.
Ports, Saumur, Sauterne, and Sherries, iv, 156-158. [152.]
Processes of production, iv, 149-
Spanish, Hungarian, Italian, other European wines, iv, 158, 159.
[See also subheading Storage.]
Woburn Earth, iv, 123.
Woodcock, iii, 209; tinned, iii, 171.
Worcestershire Sauce, ii, 195.
Workmen's Compensation Act,
Wort, iv, 146, 178. [iv, 244.]

X, Y

- Xnuc nal and other foods from Yucatan, ii, 104, 105.
- Yams, ii, 270.
- Yeast, ii, 222. [178, 179.]
Yeast-extract—fraud and tests, iii,
Yellow Paints, iv, 109, 110.
Yellow Soap, iv, 89.
York Cheese, iii, 70, 89.
York-cut Hams as distinct from York hams, iii, 107.
York Hams—real, and as sold in Paris, &c., iii, 95, 107, 109.
Young Hyson Tea, ii, 33, 39, 40.
Yucatan—new foods from, ii, 104, 105.



THE PRACTICAL GROCER

ADVERTISING SECTION

PART I

Advertising for Manufacturers and Wholesalers

(BY THE PROPRIETORS OF THE SPOTTISWOODE SERVICE)

What are your labels worth?

Are they striking?

Do they hit out, so that when a customer enters the retailer's shop she (or he) sees your article at once?

It is worth your while to get labels that make impressions, that are **seen**, for your goods must be seen to be sold. The same applies to packet designs, show-cards, trade-marks, and to all other advertising matter. A good label is advertising just as much as newspaper space. We know of cases where

the adoption of a new “selling” label has doubled, in three months’ time, the sale of an article already well known.

There are eight million families in this country, eight million homes in which your Goods might be used.

Advertising is the policy that places your Goods in these eight million homes. It covers all details, embodies the selling plan, the designing of all printed matter, packets, &c., directs publicity in the trade and general press.

Most things grocers sell—the things you deal in—are household necessities. This is the class of Goods which can be most readily and successfully advertised.

In many lines **branded** articles (that is, articles advertised under a name or trade-mark) already exist, and have large sales. By advertising rightly a manufacturer or wholesaler does three things:—

- (1) He reduces the cost of selling to the retailer.
- (2) He reduces the cost of the article advertised by creating a bigger demand for it.
- (3) He can get a better price, for the public **are** always ready to pay more for an advertised than an unadvertised article.

We believe we can help you to advertise rightly if you have an article that can be advertised. In any case we ask you to take advantage of the offer which follows. Acceptance of it does not commit you to anything, except that you will carefully consider the proposition we will lay before you. We leave it to you to decide whether it is worth your while going further into the matter. On the next page is a summary of the service we can render and of the offer we make to you.

SPOTTISWOODE

SERVICE



We offer to any manufacturer or wholesaler the services of an advertising department which no one advertiser could afford to retain.

The force behind the service is as follows:—

The brains of **trained** advertising experts, who will investigate your advertising as it at present stands, and discover (if they exist) the real advertising possibilities, or create new selling features.

The knowledge of **trained** advertisement-writers who know from experience the class of copy that **sells Goods**.

The skill of over twenty Artists, chosen from the best available talent, who will make your announcements eye-compelling and attractive.

The experience of keen buyers of space, conversant with the pulling powers of different media and their circulation.

This force stands behind the advertising of every client of this Agency, whether he spends £100 or £100,000.

We offer this force as an advertising department to you.

Moreover, we offer to demonstrate our service free of charge.

If an advertiser will ask us for credentials we will produce them in the form of a complete campaign, written and illustrated specially for him, dealing with the problems peculiar to his business. All we ask is the time necessary to prepare such a campaign.

Surely it is to your advantage to afford us the opportunity we seek?

Write—

THE SPOTTISWOODE ADVERTISING AGENCY

CLUN HOUSE, SURREY STREET, STRAND, W.C.

*Telegrams—*Frostless, London

*Telephones—*13401 Central
13402 Central

PART II

Advertising for the Retailer

(BY THE EDITOR OF "METHOD")

One Grocer saw an opportunity in tea—and took it. He made Millions.

Another Grocer saw an opportunity in soap—and took it. He also is a Millionaire.

Advertising pays, both for the big business and the small.

It will pay in your case if properly planned and consistently carried out.

BUT IT IS SPECIALISTS' WORK. You have not time to do it. It is not work for odd moments, and you cannot afford to spend on advertising time you ought to give to your business.

Use "**METHOD'S**" advertisement-writing department.

We can help you.

We have **FIVE** kinds of service to offer you.

SERVICE No. I

Criticism and Ten Advertisements

We will plan your advertising for a year, help you to decide how much money you ought to spend, and where you ought to spend it. We will also write ten special advertisements for your use, dealing with the special conditions of your business. We will advise and criticise when necessary.

For this complete annual advertising service we charge not less than £12, 12s.

SERVICE No. II

Advertisements

We will write, from particulars to be supplied by you, twenty-six advertisements, in lots of not less than two at a time, for £7. These advertisements will be specially written for you, to meet your particular needs.

Any advertisement written by us for you may be returned for correction or revision if details or particulars are not correct. We make this offer because it is often difficult to get full details from a client's letters. Every advertisement sent out by us under this service is specially written for the man who orders it.

Fifty-two advertisements, in lots of not less than four at a time, for £12.

One hundred advertisements, in lots of not more than four at a time, for £21.

SERVICE No. III

Advice and Advertisements

For both advice as to advertising generally, and supplying advertisements specially written (as in Service II), we charge the following fees:—

For three letters of advice and fifty-two advertisements, in lots of not less than four at a time, £21.

For four letters of advice and one hundred advertisements, in lots of not less than four at a time, £30.

SERVICE No. IV

Illustrated Advertisements

Special terms, according to requirements, on application.

SERVICE No. V

Booklets and Circulars

We will write, illustrate, and print (if requested) business-bringing booklets.

A booklet is a necessity to every retail advertiser.

No parcel should leave the shop without a booklet or other advertisement in it. Either an advertisement of the business or of some particular branch or article.

The day of the common hand-bill as a means of getting good-class trade is over. Well-written literature well printed is what the up-to-date retailer must use.

We never charge less than ten shillings for a circular or piece of printed matter. But the price depends on the length and the amount of work necessary to plan and write it. A booklet usually costs for writing about £3, 3s. Illustrations are extra.

The printing we leave to you and your local printer, if you like; but as a rule it is better to pay a little more and have it properly supervised by us.

If the matter is left in our hands, your booklet will be printed by Mr. H. E. Morgan of Amberley House, Norfolk Street, London, the well-known printing expert. The work will be well done. We guarantee it. It may not be cheap work, but it will be good work.

If none of the foregoing services meet your requirements, please write us. We are at any time ready to meet the wishes of any business man in this matter of advertising service.

In reference to all or any of the above propositions, write

THE ADVICE BUREAU

“METHOD”

231-232 STRAND, LONDON, W.C.

